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BRITISH
MANUFACTURING INDUSTRIES.

THE INDUSTRIAL CLASSES,

AND

INDUSTRIAL STATISTICS.

BY

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TEXTILES AND CLOTHING, FOOD, SUNDRY INDUSTRIES.

WITH MAPS.

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INTRODUCTION.

To the series of volumes which bear the title of the 'British Manufacturing Industries,' I have thought that a pendant might with great propriety be added, dealing with that large section of our population employed in those manufactures. Hitherto we have been engaged with the nature of the *work* done; it is now proposed to take up the subject of the *worker*. It is singular, even in these days of social science, to note how scanty and scattered is all information about the British workman. There are no books in detail that are devoted to him, his concerns and interests being principally to be gathered from Blue Books, Reports, Transactions of Societies, and the public newspapers. From a political point of view, he has been frequently written and talked about—too much so indeed for his own good or for the good of the country,—but comparatively seldom, when we come to inquire into his social condition, as dependent upon, or connected with, his special branch of labour.

Together with the many changes in the methods of manufacture, there have been equal revolutions in the style and character of our artisans. Many new trades and processes have been introduced which were unknown thirty years ago, while, on the other hand,

manufactures which were then of the highest importance, have dwindled down, and are now in a way to become extinct. Few people are aware of the immense development of the last quarter of a century in the condition for the better of our English operatives, whether in a monetary, social, educational, sanitary, or legislative light; it is very doubtful whether the bulk of the working classes themselves ever take heed of the strides that they have made, or think how little they have to lament that the "good old times" are past and gone.

I have endeavoured in these two volumes to discuss this branch of our manufacturing industries, though, from my limited space, very briefly. It has been my aim to show how steadily progressive has been the legislation for the protection of life and health, and how our Factory and other working-class Acts have grown up, as the result of much experience and constant watchfulness on the part of successive governments. I have carefully avoided the political side of the question throughout, feeling the uselessness of discussing points, about which such grave differences exist. I may, however, be permitted to express an opinion, that it would be better for the English artisan himself, if he attended more to his own self-improvement, than to the constant agitation which is too often based upon, and the result of, insufficient and one-sided information. The educational phase too has been omitted, both from want of space, and because it has been made the subject of innumerable documents and reports elsewhere.

As regarding the statistics of population and employés, in the main, the Census tables and the Factory Returns of 1871 and 1874 have been followed, as being the latest official statements on these matters which have appeared. I have frequently, however, been enabled to supplement them by later returns from various sources, or from private inquiries. The question of wages is always a difficult one, about which to gain accurate information. The Factory Returns contain a large amount of matter on this head, of which use has been freely made, and, where possible, statements of wages at the present time have been placed side by side. In most cases the fullest information has been afforded to me, while, in a few, my request has been declined or unanswered. Anyhow, the general reader, for whom these volumes are intended, will have sufficient data to show him the ordinary earnings of our British working classes, and can therefore draw his own conclusions as to their domestic social condition.

In dealing with the statistics of each trade, more figures have possibly been introduced than may be agreeable to my readers, but I have done so in the hope of showing, how intimately allied is the development of our manufactures with the state of wages and the general condition of the working classes, and of making this branch of my subject rather a text upon which to found my discourse, than as the main feature of the work.

In conclusion, I have to acknowledge the very courteous and kindly assistance which has been

afforded to me by a great number of correspondents, official and otherwise, the majority of whom, although immersed in business themselves, have yet found time to procure me the knowledge which I have sought. I have freely borrowed, wherever any information was to be gained, although in all cases the source from which it was obtained has been acknowledged. Where so many facts and figures are involved, there must needs be errors or omissions; and for any corrections or additions I shall be greatly obliged.

G. PHILLIPS BEVAN.

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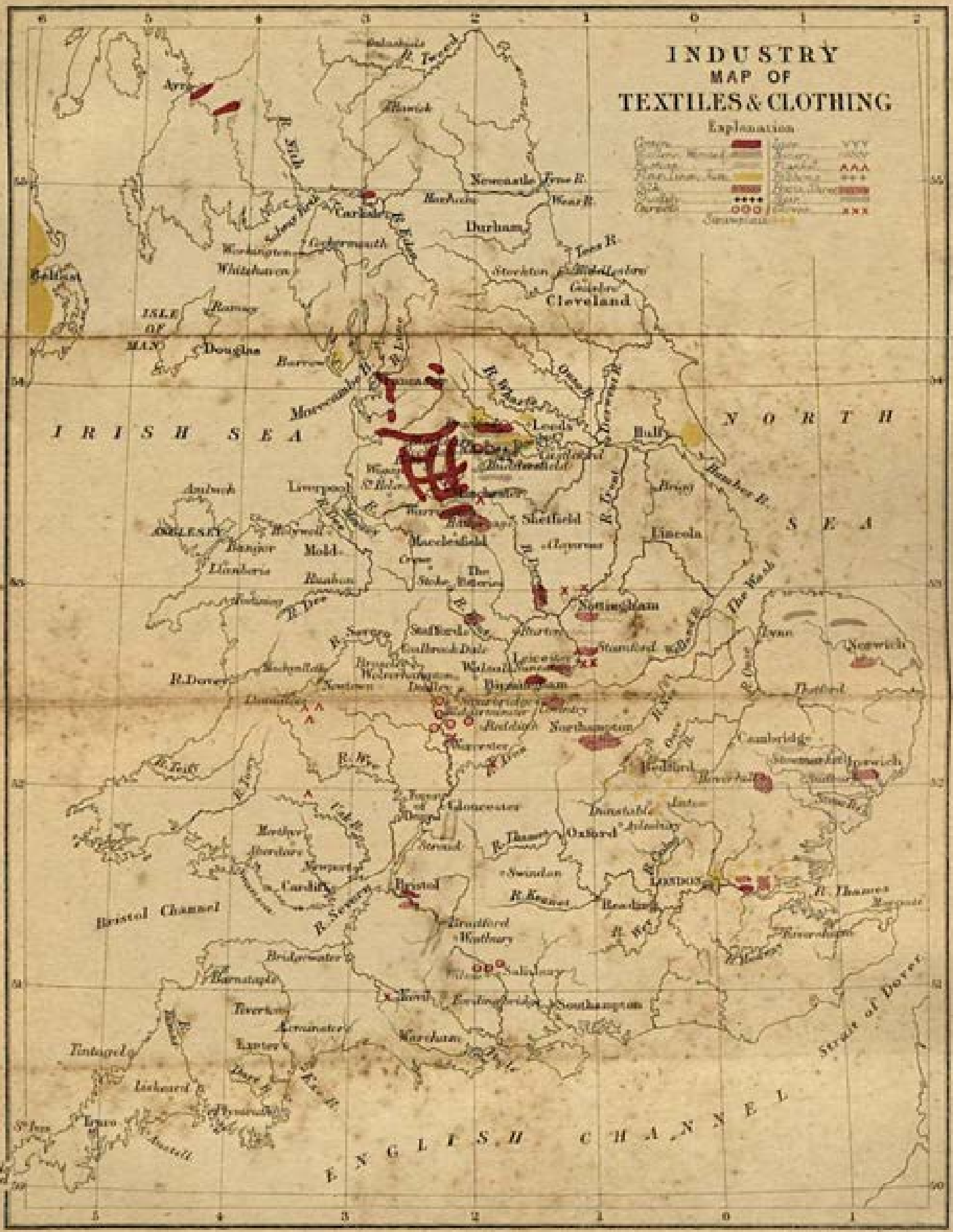

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BRITISH MANUFACTURING INDUSTRIES.

INTRODUCTION.

TEXTILES AND CLOTHING.

With the exception of staple industries, such as coal-mining and the iron trade, we may safely say that in the textile manufactures the prosperity of Great Britain is bound up, more than any other. Whether we consider them from a numerical point of view, as regards the number of persons who are directly or indirectly engaged in them, the enormous amount of capital embarked in them, the huge financial operations of which they form the lever, the many subsidiary trades which have sprung from them, the extent of country which is dependent upon them, or the vast ramifications of international trade and commerce which exist throughout the civilized and uncivilized world through their influence, they are worthy of the deepest regard and study, and astonish, the more they are examined.

Before entering into the details of each great division of our textile manufactures, it will be well to get

as general a view as we can of the number of people directly interested in them; and to these we must add those, who are also engaged in the further application of the textiles to the various articles of dress. For this purpose I shall first of all take the Census division, which includes dress, and afterwards the purely Factory division; as, although textiles are generally identical in people's minds with factory systems and supervision, there are a vast number of operatives who do not come under either. The Census Returns are as follows:

ENGLAND.

	Males.	Females.	Total.
Dyeing—			
Dye-colour makers	2,551	277	2,828
Calenderers	11,398	1,484	12,882
Others	2,206	..	2,206
Woollens—			
Woolstaplers	1,957	..	1,957
Felt makers	327	..	327
Woollen cloth makers ..	71,683	56,781	128,464
Fullers	1,936	..	1,936
Wool dyers	2,603	..	2,603
Worsted makers	34,053	60,713	94,766
Clothiers	1,735	..	1,735
Stuff makers	4,619	1,747	6,366
Flannel makers	782	376	1,158
Blanket makers	1,246	599	1,845
Carpet makers	7,877	3,691	11,568
Others	166	599	765
Silk—			
Silk makers	25,080	51,100	75,180
Silk dyers	1,624	..	1,624
Silk merchants	1,396	..	1,396
Ribbon makers	1,435	1,658	3,093
Silk velvet makers	..	223	223
Others	330	207	537
Carried forward ..	174,994	179,455	354,449

	Males.	Females.	Total.
Brought forward ..	174,994	179,455	354,449
Mixed Goods—			
Weavers (not otherwise described)	7,381	6,879	14,260
Bleachers (ditto)	3,645	..	3,645
Manchester warehousemen	790	..	790
Mercers, drapers	55,225	19,112	74,337
Fancy goods	2,850	5,986	8,836
Trimming makers	1,358	4,536	5,894
Factory workers	..	5,615	5,615
Embroiderers	..	1,409	1,409
Crape makers	..	1,166	1,166
Others	496	465	961
Cotton—			
Flax workers	7,364	10,629	17,993
Lace „	8,569	40,801	49,370
Thread makers	3,333	929	4,262
Tape „	602	796	1,398
Cotton spinners	188,272	279,870	468,142
Fustian cutters	3,193	4,179	7,372
Cotton warehousemen ..	3,214	..	3,214
Muslin makers	100	..	100
Calico printers	8,804	1,056	9,860
Dyers	2,322	..	2,322
Others	444	538	982
Hemp—			
Mat makers	1,345	574	1,919
Hemp „	463	115	578
Jute „	279	..	279
Rope and cord makers ..	10,294	1,401	11,695
Canvas makers	805	260	1,065
Sacking „	714	1,515	2,229
Net „	..	260	260
Others	763	879	1,642
Dress—			
Hair and wig workers ..	11,885	1,240	13,125
Hatters	13,540	8,238	21,778
Straw plaiters	3,593	45,270	48,863
Furriers	3,704	2,354	6,058
Tailors	111,843	38,021	149,864
Carried forward ..	632,184	663,348	1,295,532

	Males.	Females.	Total.
Brought forward ..	632,184	663,348	1,295,532
Milliners	1,141	299,668	300,809
Stay makers	1,184	8,674	9,858
Hosiery workers	22,367	19,671	40,038
Hosiers	4,381	4,147	8,528
Glovers	1,594	15,217	16,811
Glove makers (other than leather)	1,135	5,105	6,240
Boot and shoe makers ..	197,465	25,900	223,365
Patten makers	1,194	..	1,194
Button makers	2,372	3,439	5,811
Umbrella makers	3,091	2,804	5,895
Shirt makers	..	80,038	80,038
Others	2,341	1,728	1,728
Total for England ..	866,449	1,136,435	2,002,884

SCOTLAND.

Dyers	2,443	800	3,243
Woollens	18,402	23,815	42,217
Silk	1,276	1,270	2,546
Cotton and flax	35,114	85,636	120,750
Mixed goods	19,861	..	19,861
Hemp	4,753	2,842	7,595
Dress	47,218	54,116	101,334
Total for Scotland ..	129,067	168,479	297,546

IRELAND.

Dyers	324	71	395
Woollens	2,852	12,846	15,698
Silk	465	320	785
Cotton and flax	29,259	28,059	57,318
Mixed goods	25,543	62,190	87,733
Hemp	1,146	574	1,720
Dress	53,089	117,596	170,685
Total for Ireland	112,678	221,656	334,334

This gives a total for—

England	2,002,884
Scotland	297,546
Ireland	334,334
	2,634,764

And if we add to these the large numbers of people engaged in the machine trade, which is so entirely dependent on textiles, and the shipping and carrying trades, there cannot be less than 4,000,000 immediately connected with this great branch of industry.

The Factory Returns of 1871, which are the latest that furnish the particulars of *all* the textiles and dress, give the numbers of *employés* on a different basis:

	England.	Scotland.	Ireland.
Cotton	414,970	30,960	4,157
Wool	100,640	23,000	1,490
Shoddy	3,816	..	..
Worsted	103,514	5,968	..
Flax	19,816	49,917	55,039
Hemp	2,333	463	354
Jute	1,932	14,911	727
Silk	47,311	813	..
Hair	1,833	485	21
Lace	8,268	..	102
Hosiery	8,995	697	..
Elastic	4,623	..	..
Calico printing	15,321	10,205	732
Other ,, ...	3,506	544	..
Bleaching	18,378	8,736	4,313
Calendering	2,341	1,549	412
Warehousing	3,023	..	2,339
Fustian cutting	4,728	..	401
Hand-loom weaving ..	2,581	2,126	1,077
Carried forward ..	767,929	150,354	71,163

	England.	Scotland.	Ireland.
Brought forward ..	767,929	150,354	71,163
Hand-lace making ..	103	..	..
Embroidering	2,007	430	500
Lace dressing	4,305	..	..
Hosiery finishing	1,083	..	..
Boots and shoes	16,641	1,595	182
Millinery	9,358	1,050	676
Shirts and collars	2,475	..	3,557
Tailoring	6,653	1,596	1,002
Hats	8,390	858	137
Gloves	1,938	..	..
Straw hats	2,360	..	..
Artificial flowers	1,098	..	..
Others	2,147	264	349
Total	826,287	156,167	77,569

Giving a grand total of 1,060,023. This, it must be remembered, takes no account of the vast mass of domestic industry, but simply of associated or factory work. The Factory Returns of 1874 show an increase in the number of textile workers, viz.:

	Children under 13.	Males up to 18.	Above 18.	Females above 13.
England	113,567	66,499	205,957	397,098
Scotland	8,394	11,149	29,508	105,668
Ireland	3,721	6,819	12,995	44,104
Total	125,682	84,467	248,460	546,870

or a gross total of 1,005,479.

Having stated these preliminary numbers, further statistics will be found under the head of each branch of textiles.

CHAPTER I.

COTTON.

As the most important of all our textiles, from whatever light we view it, I proceed to describe cotton first, commencing, as usual, with the numerical side of the question. In 1871 there were of cotton operatives as follows:

	Males under 20.	Above 20.	Females under 20.	Above 20.
England ..	69,996	118,276	118,602	161,268
Scotland ..	..	..	..	..
Ireland ..	264	799	501	801

The respective ages of the English workers were:

	5–	10–	15–	20–	25–
Males	2,589	31,134	36,273	23,817	35,458
Females ..	2,182	43,150	73,270	53,955	59,529

	35–	45–	55–	65–	75
Males	25,654	18,208	9,780	4,232	1,127
Females ..	28,291	12,923	4,357	1,655	558

by which it is plain that, except at the very earliest and towards the latest portion of life, the majority of the artizans are females.

The Factory Returns give a summary of the number of mills in the United Kingdom, viz. classifying them as factories (*a*) for spinning, (*b*) for weaving, (*c*) spinning and weaving together, (*d*) sundry:

	No. of Factories.	No. of Carding Machines.	No. of Spinning Spindles.	No. of Doubling Spindles.	No. of Power Looms.
England	2,371	62,709	32,631,631	3,491,327	411,336
Scotland	98	2,985	1,256,686	231,185	25,903
Ireland	14	266	124,904	1,025	3,437

employing:

	Children under 13.	Males up to 18.	Above 18.	Females above 13.	Total.
England	42,648	36,735	112,129	223,458	414,970
Scotland	516	1,004	3,996	25,444	30,960
Ireland	117	470	921	2,649	4,157

A very interesting report was made by Mr. Redgrave * of the comparative numbers of factories and workers at different dates, which will show how rapid is the increase of the latter:

	1851.	1861.	1871.	1875.
No. of factories	1,932	2,877	2,483	2,655
„ spinning spindles ..	20,977,017	30,387,467	34,695,221	37,515,772
„ power looms	249,627	399,992	440,676	463,118

* Factory Reports, 1875.

To show how much more relatively productive factories are now than they formerly were, the proportion of spindles was 10,857 in 1850 to 14,130 in 1875; and of power-looms, 129 in 1850 to 174 in 1875. This proves that the factories in the last quarter of a century have been augmented in size, and that there has been a tendency to concentrate machinery in one mill, and also that machinery has become more and more self-acting and requires less manual labour. This is borne out by the statistics of the power-loom weavers, who were—

In 1861	166,209
„ 1871	165,341
„ 1875	163,632

Or, in other words, that the proportion of looms to weavers was $1\frac{3}{4}$ in 1861 to $2\frac{5}{6}$ in 1875. But while this section of workers has declined in numbers for the reasons above mentioned, there has been a vast increase in other branches, viz.:

	1850.	1861.	1871.	1875.
Children up to 13 ..	14,993	39,788	43,181	66,900
Males 13 to 18	37,059	41,207	38,209	38,557
„ above 18	94,960	119,268	117,046	115,391
Females above 13 ..	183,912	251,306	251,551	258,667

Here we see, that while the development of self-acting machinery has diminished the employment of the more expensive kinds of labour (males above 18), it has increased that of the cheaper labour, such as

females and children. The proportion of the different classes is thus:

	1850.	1875.
Children	6·4	14·
Males 13 to 18	10·3	8·
„ above 18	27·4	24·
Females	55·9	54·

At present (1876), we have about 39,000,000 spindles, while all the rest of Europe has only some 19,500,000, and the United States about 9,600,000.

Before I come to the details of factory workers, I cannot do better than transcribe the following most excellent historical *résumé* of the system, as given by Mr. Redgrave in his Report for 1875, which expresses in a short space all the main features of the work as regards the workers: "The textile manufactures of this country have gone through three phases, each unlike the other; and in considering the physical condition of factory operatives at the present day, it is essential not to take that condition by itself, but to compare the present state of things with the two distinct anterior periods. For many years the textile industry was carried on in the rural districts only. The power used was water. Water on the hill-sides was irregular in its flow; work was therefore irregular. When the stream was full, work was brisk (we should have called it excessive); when it was dry the factory hands were employed on the lands, in hay-making, or other like occupations. Thus the operatives

were both farm labourers as well as factory workers, and as manufacturing was not the complicated affair that it is now, they were free from many of the evils which afterwards arose from the introduction of steam, and the immense enterprise and energy of our manufacturers. In some places this patriarchal system existed even in comparatively recent times. . . . . After this system came that of manufacture, pure and simple, the erection of large steam factories, the bringing together, without previously providing adequate and proper means for healthy and decent accommodation, hundreds of families to fill these buildings; and then followed immediately the proneness to run the costly machinery, regardless of the waste of human life, health, and happiness, for any number of hours daily that seemed good to the capitalist. It was during this period, that the factory hand became changed from the healthy labourer to the weakly, anæmic, and frequently decrepit operative. Doubtless, from the cost of the introduction of steam and the desire to run the machinery as long as possible, the factory hands did degenerate from the sturdy labourer and operative in the valleys and on the hill-sides of Lancashire and Yorkshire, to the wasted and downtrodden operative of the purely manufacturing town, working daily and all day long, and possibly part of the night also, in a close, hot, ill-ventilated factory, returning from work to a dwelling more unhealthy than the factory, until the factory population appeared to have become a distinct race, that was known at a glance, so defined were the effects of

over-work and unhealthy dwellings upon the physical appearance and condition of the people. The harvest of ills from this state of things, the continued effect of over-work in hot, ill-ventilated factories, and residence in unhealthy houses, reached its climax in 1833, when the first real Factory Act was passed; and for nearly thirty years since, the hours of work have been moderate, factories better ventilated and more healthy, work lighter, towns and dwellings becoming year by year better ordered."

This little historical condensation will prepare us for a clearer understanding of the details of the factory work, as regards its influence upon the health of the workers. Mr. Isaac Watts, the secretary to the late Cotton Supply Association, has given us a compendious and yet elaborate account of the various processes in his interesting article on Cotton;* and I need, therefore, only refer in detail to each process, with respect to the different branches of workpeople employed, and to the raw material itself, in as far as it occasionally materially affects the conditions of labour. Where possible, too, I shall compare the present working conditions with those of the time that is past and gone.

Cotton operatives are divided into three great classes of workers: (*a*) preparers of the material for spinning, all except the "ginning," which is done in the country where the cotton is grown; (*b*) spinners; (*c*) weavers. The preparatory processes are: (1) mixing the various sorts together so as to feed (2) the "opening" or

* 'British Manufacturing Industries.'

willowing machine, which breaks up hard lumps and removes the dirt from the cotton. This operation is almost always attended to by men, and was formerly accompanied by volumes of dust; this has, however, been obviated by powerful fans, and is no longer a cause of complaint. Next comes (3) the "scutcher," by which the fleecy cotton, as left by the opener, is formed into a roll, fit for (4) the "carding" process, by which the fibres are formed into a soft, elongated mass, called a "sliver." Amongst spinners of fine qualities (5) combing machines are next used, but not invariably in ordinary mills; the next process after carding being (6) "drawing," in which the slivers are laid together, so as to have their length increased, and the fibres strengthened and laid parallel; (7) "slubbing," in which the sliver has a certain amount of twist given it, so as to secure its coherence, and is then wound on a bobbin; and (8) "roving," in which the necessary elongation of the fibre is completed. In some of the smaller mills, the carding, drawing, slubbing, and roving, are all carried on in one large room; but in more extensive factories the machines are placed in distinct rooms. In carding, the *employés* consist of lap-carriers, strippers, grinders, and doffer-can minders. The lap-carriers are usually boys up to sixteen or eighteen, whose work is to carry the rolls of willowed or opened cotton from the blowing machine, and place them on the carding engine; though in some cases these are now superseded by machinery, in the shape of a pair of feed rollers, which convey the laps from one engine to the other.

The great evil of the carding-room was, until lately (and, indeed, even now in small mills), the enormous quantity of dust that was given off, and the oppressiveness of the atmosphere. This dust is light and fibrous, "consisting mainly of minute fibres, varying in length from a line to a very small fraction of it. In the mills where the cotton used is of a very low quality, there is, in addition to this fine dust, much 'flying,' 'fluff,' or 'flue,' consisting of longer fibres. In the finer spinning mills, where the staple used is long, the air on a first inspection might seem tolerably clear. But the first sunbeam revealed the dense and universal dissemination of dusty particles, and the clothes and hair of the workpeople were in a state that showed how rapid was their accumulation. A rough test of this was to clean a smooth metal surface, and note the time within which sufficient dust had collected to make distinct marks upon it. Five minutes was frequently sufficient for this purpose."* This dust was much aggravated during the operations of grinding and "stripping," which are necessary, when the metal teeth by which the cotton is carded become clogged with fibres and blunted. This process was performed by men, and consisted in reversing the action of the rollers, so that the fibres were brought to the surface and removed. As there were often a number of carding machines in one room, and the process of stripping had to be gone through from three to five times a day, it may be easily imagined what a volume of dust was given off

* Report by Dr. Bridges and Mr. Holmes on Textile Factories, 1873.

during the twelve hours. The operatives who had to carry it out showed the effects of this dust in their pale, emaciated faces, and in the bronchial irritation from which they constantly suffered, causing cough, anæmia, debility, diarrhœa, and other formidable symptoms of pulmonary mischief, including expectoration, in which the cotton fibre was plainly visible by the microscope. In most large mills at the present day the carding engines are covered over, and are made self-stripping, so that much of this mischief is obviated. The atmosphere of the room is hot and close, varying from 70° to 80°, which tends to the unhealthiness of the inmates.

The drawing-frame and slubbing-frame minders, together with the can-minders, are composed of women and children. As explained above, drawing is a further elongation and straightening of the fibre, and the machine is worked at a high speed. The slivers from the carding engine are run together into a single one, and drawn out by rollers to six times the original length. The pouring forth of the single sliver into the can is called the "delivery," and usually after this, the process of drawing is repeated, the sliver being broken off when the can is full, and taken to be drawn a second time, or "doubled." Generally it has to be done also a third time, so that the cotton in the sliver will have been lengthened some 216 times, after which the cans are taken to the slubbing frames. The work of the women, therefore, is to be constantly shifting the cans from one delivery to the other. There are generally three drawing

boxes to each drawing frame, each box having four deliveries, so that the cans, when filled, have to be taken at once from the delivery side of one box to the feeding side of the other. Each can weighs when full from 16 to 18 lbs., and as one woman will move upwards of 900 cans per day, the work is unremitting, although not exceedingly heavy at any one time. There is one point that is in favour of the "minders," viz., that the machine stops of itself, should a sliver get broken in the drawing. In the slubbing and roving process, much the same work is done, though perhaps a little more skill is required, in piecing the broken ends and replacing the empty bobbins by full ones.

(*b*) Spinners form the second great class of cotton factory hands. I may briefly state that the spinning process is of two kinds, differing in detail, though the same in principle. The throstle is the simpler of these machines, and consists of a row of spindles with "flyers" screwed on their top and fitted with bobbins, so that the spindle and flyer, revolving with great rapidity, twist the thread delivered by the rollers and lap it on to the bobbins. The latter are carried round with the spindles, but do not revolve at such a high speed. Throstle yarn has a closer twisted fibre than mule yarn, is stronger and more even, and is more used for certain purposes, such as making sewing thread. In the mule machine, the spindles are placed on a carriage, which moves backwards and forwards from the rollers, the spindles at the same time revolving rapidly and converting the stretched roving

into yarn. "The twist is put in as the carriage recedes or is drawn out, and the winding of the yarn upon the cop is performed by a separate motion as the mule or carriage moves up, the principle of drawing being the same in both throstle and mule."—*Watts.*

The principal changes in mule-spinning in the last forty years have been, the making them self-acting instead of, as formerly, worked by hand, and the great increase in the number of spindles, which, in the time of Crompton, the inventor, in 1786, averaged 30; in 1800, 200; in 1833, about 350; in 1873, from 700 to 750. The operatives in mule-spinning consist of the spinners or minders, who direct the operations of the mule generally, and a certain number of boys called "piecers," whose part it is to piece the broken threads. Each spinner, with his piecers, attends to two mules, standing in the passage between them, and during the "draws," or "stitches," of the mule carriage, watching the threads, which are constantly getting broken. Messrs. Bridges and Holmes give a calculation, in their Report, of the average number of spindles and workers in 1873. In proportion to 26 mules, the average was—

Spindles	45,516
Spinners	26
Piecers	59
Scavengers, creelers or bobbiners ..	12

making 88 hands, with 517 spindles to each hand. The latter class of operatives are half-timers, who do any odd work. The result of their observations was, that

the number of spindles to each hand had progressively and rapidly increased, as had also the rapidity of the "draws" or "stretches" per minute of the mule carriage. Whereas in the spinning of medium or coarse counts forty years ago, the mule stretches were from 1700 to 1800 per day of twelve hours, they now average 2161 per day of ten and a half hours, so that considerably more attention and movement is required on the part of the piecers. When the yarn that is spun is fine, it is all the better for the piecers, for the motion is less and the thread less apt to break. In throstle spinning, girls (young persons) are employed to attend to the spindles, while children, called "doffers," remove the bobbins when full, and replace them by empty ones. Each woman superintends from 600 to 700 spindles, and there is no great hardship in the work beyond the constant attention required. The greatest evils are the high temperature of the spinning room and the bad ventilation, there being usually an objection to open the windows, partly from the aversion of the operatives to anything like cold, and partly lest the fine stretched-out yarn should be blown about or be stained by "blacks."

In respect of temperature, the "reeling" room is better off, while the work is tolerably light, the women and girls standing to the reels, which are turned by machinery. Where doubling is carried on for making cotton thread, the atmosphere is pleasant enough, as it contains more moisture, from the water-troughs through which the threads are passed. "Warping" is similar in the conditions of labour to reeling. It is the first

process of the weaving department, and is usually done by women, who, after the cops of twist are wound upon the bobbins, take the latter and run from 400 to 600 threads together upon the beam. They have this advantage, however, over the reelers, that they can sit down to their work, while the latter must stand. When the beams are ready, they are taken to the sizing room and there prepared for the weaver, the object of sizing being to give tenacity to the warp and lessen friction, while it is being woven.

Next in importance to the spinning is the weaving department, in which a great number of women find employment; and I have already alluded (p. 8) to the vast numerical increase of the power looms in proportion to the number of weavers, within the last quarter of a century; showing that between 1871 and 1875, the former had risen from 399,992 to 463,118, while the latter had decreased from 166,209 to 163,632. This conclusively proves the advances made in the self-acting character of the machinery, and the many improvements which must have taken place since the early days of weaving, when each loom required the services of one weaver, whereas now three, and sometimes four, looms are superintended by a single weaver, though not so many in Scotland and Ireland. The principal of these improvements have been, the adoption of the "weft-fork," by which the loom is thrown out of gear, and stops, the moment that the weft breaks; self-acting "templets," by which the cloth is kept constantly stretched; and increased speed in the loom itself. In the early days of weaving, the "picks"

or throws of the shuttle varied from 90 to 112, whereas now they are between 170 and 200. The principal difficulties in weaving arise from the brittleness of the yarn, particularly when it is over-sized, causing breakage in the threads, which, were not the loom stopped at once, would produce irreparable entanglement and confusion. When it happens (and this depends very much on the character of the yarn), the loom must be thrown out of gear, the broken threads re-tied, and passed through the healds and reeds, necessitating a check in the work of several minutes. Weaving is carried on in sheds, some of which are very dusty, owing to causes which I shall describe, while some are rather damp, from the use of steam jets. Otherwise the operation of weaving, though sedentary and monotonous, is not unhealthy, though it is doubtful whether the effort to superintend too many looms at a time is not too great a strain upon the nervous system of the vision, especially of a woman. There is a tendency to encourage competition in the amount of work which can be thus undertaken, arising partly from the system of giving the overlooker a bonus upon the earnings of the weavers, and partly that "the admiration of their companions and the approbation of the overlooker, appear to be at least as powerful inducements as the increase of their wages. A woman who can mind four looms, without an assistant, has attained a certain position, and is an object of attention. 'Hoo's a four-loomer; hoo's like to be wed,' will be commonly remarked of such an one." *

* Report of Messrs. Bridges and Holmes, 1873.

The dustiness of the weaving sheds, especially in some mills in certain localities, such as Todmorden, brings us to an evil which has been the subject of much inquiry, and of a special Report made by Dr. Buchanan, in 1871. It will be seen that adulteration is a vice which is not limited to our comestibles. The cotton warp requires to be sized, as I have already stated, to give it tenacity, and this is done by passing it through some semi-glutinous paste, which was usually composed of flour and tallow, to the amount of about twenty per cent. of the weight of the warp. At the time of the Crimean war, however, tallow became scarce and dear, and some ingenious manufacturers found out that china clay would be as good and as cheap a substitute, it having been previously observed that it improved the colour of the warp, making it less brown. So far, there was not much to complain of, until the American war broke out, and cotton of good kinds became very dear and difficult to obtain; the china clay thereupon came still more into vogue, as it was discovered that it would give the requisite tenacity of twist to low priced and inferior cottons of short fibre; indeed without it, it was very difficult to weave these cottons. The convenience of the material, however, was the means of introduction of much dishonesty into the trade, although, of course, not amongst the high-class manufacturers; for "weight for length had been, as it still is, the chief test of the goodness of any description of yard-wide cloth; and with the scarcity of raw material came the practice of giving a fictitious weight to cloths containing less cotton, in order to make it

appear that they contained more. It became a matter of rivalry with sizers, which of them, on the order of manufacturers anxious to meet the demands of merchants, could put on most foreign matter upon the cotton warps. From this practice of 'heavy sizing,' the more respectable houses long kept aloof, but they did so at the expense of their immediate trade; and thus every yard of cotton cloth made at Todmorden and many other places has been weighted with quantities of size not required for any manufacturing purposes, but used as an adulteration." * But this was not the only evil, for the sizing was composed not only of china clay, but of various other substances still more hurtful, such as alum, baryta, or arsenic, depending upon some particular prescription of the sizer. Whatever was the mixture with the china clay, it came off during the process of weaving to a very large extent, and filled the weaving sheds with a most unpleasant opaque dust, covering the weavers' faces, and causing much irritation to the mucous membrane of the nose and throat, besides producing great ulterior pulmonary mischief. Where the dust was not so great, it was kept down by having the weaving sheds damp, so that the sizing compound would not break up so much, while the cloth would be also heavier by so much moisture; and this naturally caused great discomfort in the weaving sheds. The extraordinary length to which this evil was carried is shown by statements from a maker, that in a piece of cloth weighing 4½ lbs., the

* Report of Dr. Buchanan, 1872, on "Certain Sizing Processes in the Cotton Trade."

unsized warp would weigh 2 lbs. 2 ozs.; the weft 1 lb. 4 ozs., the size 1 lb. 2 ozs.; while another stated, that in a piece of cloth weighing 19 lbs. there would be from 5 lbs. to 6 lbs. of size. The effects of the size dust upon the weavers in mills where this was carried on very much resembled those to which potters are liable.

I have thus briefly endeavoured to show what are the divisions of labour in a cotton-mill, and the circumstances under which it is carried on. The hours of labour are from 6 A.M. to 5.30 P.M., deducting half an hour (8 to 8.30) for breakfast and an hour for dinner (12.30 to 1.30), while on Saturdays the mill closes at 1 P.M. This gives a total of 56½ hours a week. These arrangements are the result of the Act of 1874, and as regards meal-times are looked upon as not being the best that could be desired; for those, who are most capable of judging, consider that it would have been better to let the extra half hour be given for breakfast, the present time being too short to allow the operatives to go home and have their meal in comfort, instead of which it is taken, badly cooked and hurriedly, in the mill. Not only is this unwholesome, but it offers opportunity for breaking the regulations, by sweeping up or cleaning the machinery during these hours.

The attention of the Legislature has been principally given to the protected classes who work in cotton-mills, viz. women and children. In England the numbers of married women who are factory hands are very considerable, whereas in Scotland it

is considered as rather beneath the dignity of the married woman to work in a mill, except when pressed for money. There is no doubt as to the evils of such a system, for many a clever factory hand is married to a drunken, profligate husband, simply that she may earn more money for his pleasures, while the mortality of the children is largely increased by the mothers going to the factory and leaving the children to be nursed at home, or by a "baby minder," who, for a small daily sum, takes in the little unfortunate and doses it with opiates. Should it escape this fate, another alternative is presented to us by Mr. Leach, a certifying surgeon, near Oldham: "As things now stand, a mother leaves her infant (say of two months old) at 6 A.M., often asleep in bed; at 8 she nurses it, after which the child is stuffed with some indigestible food. On her return at noon, overheated and exhausted, her milk is unfit for the child's nourishment, and this state of things is again repeated until 6 P.M.; the consequence being that the child suffers from spasmodic diarrhœa, often complicated with convulsions, and ending in death." * Mr. Baker, H.M. Inspector of Factories, gives an interesting return, in his Report for 1873, of the number of married women engaged in our different textile manufactories. In cotton there were 1127, of whom the majority were between twenty and thirty years of age; also 161 widows, and 96 deserted. The percentage of the married to those employed was 26·5.

This brings us to a question which has for some

* Factory Reports, 1872.

time attracted the attention of those engaged in administering the factory laws, viz. the degeneracy or deterioration of the factory population. A series of questions addressed in 1875 to the various certifying surgeons has proved this fact beyond doubt. Mr. Ferguson, of Bolton, attributes the change for the worse to the intemperate habits of the people, the innutritious food, and the excessive use of tobacco by the very young. Mr. Leach, of Heywood, writes thus: "The physical strength suffers much in factories from confined heated atmosphere, loaded with fine cotton fibres, flinty sand, and cutaneous exhalations; the number of gas-lights, each light destroying oxygen equal to one man; transitions from the mills and the irregular temperature to their own dwellings; diet and drinks adapted to a heated employment, and stimulants to soothe an excited nervous tension; vision always on the move; perception and volition, from the nature of their work, always in action. But, unfortunately, drink stimulants and mental excitement are resorted to, and want, improvidence, poor houses, and bad food tell against healthy offspring. No doubt factory physique is not good, but it is made worse by factory associates of vice and iniquity." * This is not a very encouraging picture, after all our efforts to promote the sanitary and moral improvement of the operative, for, that enormous improvements *have* been made since the early days of cotton-spinning, there can be no two opinions. Not only, as we have seen, has machinery been brought to the utmost pitch of self-action, so

* Factory Reports, 1875.

as to save labour, but the mills generally have been almost recast in their arrangements, while, compared with the old mills, many of the present ones are palaces. Mr. Baker gives the measurement* of the cubic area of breathing space for each person in an old mill at 2633 cubic feet, while in one of the newer ones it was 6696. Taking the question of hours of labour, I quote from a Blue Book of 1816, the evidence of Mr. Henry Houldsworth as to the cotton spinners of Manchester: "Sixteen and seventeen hours were very common to be worked for two or three of the last days of the week;" and in answer to the question, "Do you apprehend that children ever worked fifteen or sixteen hours a day?" he stated, "They must have done so, when the men did it." In his Report for 1873, Mr. Baker mentions that, when he first knew the factory districts, in 1830, the factory cripples of Lancashire and Yorkshire were a remarkable sight; it being a common expression, that they seemed as numerous, in proportion to the population of the industrial towns of these counties, as sailors were in Liverpool to its general population. I should be inclined to imagine that, when we consider all that has been done for the factory operative, and particularly the great reduction of the working hours, we must seek the causes for deterioration in other than the mere factory surroundings.

As regards the mortality of this class of operatives, the Registrar-General remarks that "the wool, silk,

* Factory Reports, 1875.

and cotton manufacturing population no longer experience an exceptionally high mortality, and it is creditable to the mill-owners to find the men and boys in their employ suffering less than many other people in towns. The people working in wool are the healthiest; at all the young ages, the mortality is the lowest; at forty-five and upwards, the cotton workers suffer much more than the workers in wool and silk." The table of mortality for males only in England for 1871 is—

Total.	5–	10–	15–	20–	25–	35–	45–	55–	65–	75
2471	,7	40	172	207	339	277	354	422	384	269

As compared with the mortality per cent. of other textiles, cotton stands as follows; though as flax, the spinning of which is a more unhealthy occupation, is associated with it, it is not altogether a good criterion.

	15–	20–	25–	35–	45–	55–	65–	75
Wool and worsted	·504	·879	·854	1·032	1·687	3·258	7·648	20·872
Silk	·710	·890	·878	1·103	1·507	2·733	6·340	15·178
Cotton and flax ..	·547	·924	·954	1·210	1·978	4·233	9·478	25·417
All classes	·632	·859	·985	1·305	1·853	3·215	6·676	16·584

I will only touch very briefly upon the legislation of cotton mills, as my reader will find a chapter devoted to this subject at the end of this volume. Since the Factory Health and Morals Act of 1802 (42 Geo. III.

c. 73) upwards of twenty-seven specific Factory Acts have been passed, including the textile, print, and bleaching works. The latest of these Acts, viz. that of 1874, is the only one to which I need now allude. It provided that the period of work should be between 6 A.M. and 6 P.M., or 7 A.M. and 7 P.M.; that no one should be employed continuously for more than four and a half hours without an interval of half-an-hour for a meal, and that two hours should be allowed for meals each day, except Saturday. Children might be employed in morning or afternoon sets, or on alternate days for the whole day. After June 1, 1876, the age of a "child" (full timer) was raised from thirteen to fourteen (unless an educational certificate was obtained), and of half-timers from eight to ten. This last regulation is not regarded favourably by employers, as tending to cause a scarcity of juvenile labour in textiles, as compared with the abundant supply in other works.

The changes for the better in wages are on a piece with the improvements in other respects, as this little table will show:

	1839. Per Week of 69 hours.	1873. Per Week of 60 hours.
	s. *d.*	*s.* *d.*
"Stretchers" (women and girls) earned	7 0	12 0
Piecers (women and lads)	8 0	16 0
Throstle reelers (women)	9 0	12 6
Doublers (women)	7 0	12 6
Sizers	23 0	30 0

The following list is one of the average weekly wages of cotton operatives:

	1871.		1876.	
	s. d. s. d.		s. d. s. d.	
Willowers	12 0		12 0	
Devillers	12 0		15 0	
Cotton-opener minders ..	12 0		15 0	
Blowing-room hands (women)	12 0			
„ „ (men)	18 0		19 0 to 20 0	
Strippers and grinders' men in card-room	18 0 to 21 0		19 0 „ 24 0	
Carders (men)	28 0 „ 35 0		28 0 „ 35 0	
Sweepers (half-timers) ..	4 0		4 0 „ 5 0	
Under carders	20 0 „ 21 0		24 0 „ 26 0	
Lap carriers (boys)	8 0 „ 10 0		12 0 „ 16 0	
Draw-frame tenters (women)	12 6 „ 13 6		17 6	
Intermediate ditto	16 0 „ 20 0		14 0 „ 18 0	
Slubbers (women)	13 0 „ 16 6		17 3 „ 20 0	
Rovers (women)	13 0 „ 18 0		16 0 „ 20 0	
Back-tenters to rovers (girls)	7 0 „ 9 6		9 0 „ 10 0	
„ slubbers ..	7 0			
Oilers and greasers	18 0		24 0	
Mule-room overlookers ..	30 0 „ 32 0		35 0 „ 40 0	
Self-acting mule minders ..	24 0 „ 30 0		29 0 „ 35 0	
Self-acting mule piecers (young men)	10 0 „ 16 0		11 0 „ 16 0	
Creelers	6 6 „ 7 0		7 6	
Throstle-room overlookers	26 0		30 0 „ 35 0	
Throstle-spinners (women)	11 6 „ 12 0		12 0 „ 14 0	
„ doffers (lads) ..	6 6 „ 9 0		9 0 „ 11 0	
„ „ (half-timers)	3 0		3 0	
„ „ and winders	12 0 „ 15 0			
„ „ and doublers	12 0		12 0 „ 15 0	
Beamers	22 0 „ 27 6		15 0 „ 20 0	
Warpers (men)	30 0		30 0 „ 35 0	
Engineers	22 0 „ 28 0		30 0 „ 35 0	
Loom-tenters (girls and boys)	5 0			
Warp sizers	26 0 „ 36 0		40 0 „ 50 0	
Drawers-in of warp (men)	24 0		24 0	
„ „ (women)	15 0			
Reachers	5 0			
Reelers (women)	15 0		12 0 „ 15 0	
„ „ (girls and boys)	10 0			
Weavers (four looms) ..	18 0 „ 22 0		4 0 „ 6 0 per loom	
„ (two looms)	11 0 „ 14 0			

It must be remembered that in different localities somewhat different rates of wages prevail, the operatives at Oldham and Manchester earning a trifle more than those at Preston; but the scale really depends on the numbers that are spun, the class of cotton used, the condition of the machinery, &c.

The average weekly earnings in a spinning factory at Manchester (1876) are:

Spinning Department.		*Doubling Department.*	
Scutching tenters ..	13*s.* 6*d.*	Cop winders	10*s.* 6*d.*
Strippers	22*s.*	Clear „	12*s.*
Grinders	23*s.*	Warp „	12*s.*
Card tenters	11*s.*	Doublers	11*s.*
Overlookers	30*s.*	„ (doffers) ..	3*s.*
Draw-frame tenters ..	14*s.* 3*d.*	„ (bobbin carriers)	3*s.*
Roving „ „ ..	15*s.* 6*d.*	Reelers	12*s.*
Jack „ „ ..	13*s.*	Makers up	27*s.*
Spinners	28*s.* 4*d.*	Warpers	45*s.*
„ (piecers) ..	13*s.* 6*d.*	Roller coverers	12*s.* 6*d.*
„ (creelers) ..	13*s.* 6*d.*		
Overlookers	38*s.*		

I shall deal as briefly as possible with the commercial statistics of the cotton trade, for they are so voluminous that they might be made to fill a volume. The imports of raw cotton for the last decade were:

Year.	Quantities.	Value.
	cwts.	£
1865	8,736,625	66,041,400
1866	12,299,233	77,530,118
1867	11,275,767	52,003,230
1868	11,863,943	55,194,157
1869	10,906,886	56,846,690
1870	11,958,635	53,477,755
1871	15,876,248	55,907,070
1872	12,578,906	53,380,670
1873	13,639,252	54,704,847
1874	13,989,861	50,696,496
1875	13,324,564	46,259,822

The table of particulars for 1875 will show the countries which furnished these supplies:

RAW COTTON.

	cwts.		cwts.
Sweden	5,975	Chili	3,798
Germany	14,567	Brazil	641,603
France	14,455	Gibraltar	6,287
Spain	37,440	West Africa ..	12,381
Turkey	8,196	Bombay	2,753,535
Egypt	1,463,503	Madras	503,886
China	5,210	Bengal	156,125
America	7,511,906	Ceylon	30,075
Hayti	10,620	Australia	17,224
New Granada ..	35,534	West Indies ..	5,104
Peru	66,396	Other Countries ..	20,744

YARN.

	lbs.		lbs.
Germany	1,224,130	Belgium	214,778
Holland	451,223	France	143,332

WASTE.

Belgium	243,616	France	823,298

Of cotton manufactures (piece goods) we imported in the same year:

From—	Pieces.	Value.
		£
China	2,272	1,080
India	52,419	26,135
Other Countries ..	3,892	1,428
MUSLINS.		
France	3,864	7,243
OTHER KINDS.		
Germany	8,323	2,193
Holland	38,861	9,715
Belgium	25,764	17,953
France	418,386	136,849
America	73,252	58,502

The exports, for the decade, of piece goods, consisting of white or plain, printed, checked, dyed, or mixed, were:

Year.	Quantities.	Value.
	yards	£
1865	2,014,303,716	46,923,384
1866	2,575,698,138	60,927,419
1867	2,832,023,707	55,965,366
1868	2,977,106,551	52,971,873
1869	2,868,630,125	53,021,505
1870	3,266,998,366	56,745,210
1871	3,417,405,811	57,760,207
1872	3,537,985,311	63,466,729
1873	3,483,735,585	61,468,172
1874	3,606,639,044	59,730,200
1875	3,562,462,166	58,598,853

and of cotton yarn:

Year.	Quantities.	Value.
	lbs.	£
1865	102,533,609	10,342,737
1866	138,804,538	13,685,627
1867	169,096,708	14,871,617
1868	174,262,196	14,714,899
1869	168,841,075	14,095,449
1870	186,078,060	14,671,135
1871	193,695,156	15,061,204
1872	212,327,972	16,697,426
1873	214,778,827	15,895,440
1874	220,682,919	14,517,425
1875	215,609,580	13,172,860

The table of particulars of exports for 1875 is far too long to be reproduced here, and I will only give a brief abstract of it, as to who are our largest customers, viz.—

COTTON YARN AND TWIST.

	lbs.
Germany	40,137,917
Holland	36,008,420
Italy	25,965,052
Turkey	13,534,870
Japan	14,810,256
Madras	10,205,710
Bengal	13,320,600
Hong Kong	13,504,400

PIECE GOODS.

Plain.

	yards.
Bengal	677,719,910
Bombay	256,662,000
China	240,495,300
Turkey	140,854,000
Hong Kong	133,813,700

Printed.

Turkey	103,428,100
Bengal	80,095,300
Brazil	98,166,200
Bombay	53,628,500
West Indies	49,002,200

Mixed, but Cotton predominating.

Australia	2,202,370
North America (British)	1,170,260
Belgium	1,586,480
Brazil	1,206,860

There is scarcely a nook or corner of the world where our cotton prints and plain goods do not find their way, and they may be said to be almost the first pioneers of civilization. But, if we are to keep up our superiority over the world in this respect, we must not drift into the adulteration of our yarns, with fictitious

sizes and wax, for our customers in tropical countries are already calling attention in an unpleasant manner to the fact that Manchester goods are not as they used to be, and have not the same abiding qualities. The 'North China Herald' of November 13, 1873, denounced this adulteration in very strong language.

We must remember, too, that we have a formidable and rapidly increasing rival in the cotton-spinning trade of India. The first steam cotton factory was established at Kurla in 1863; and there were in the Bombay Presidency in 1874, 40 mills; in Calcutta, 4; in the North-West Provinces, 2; in Nagpore, 1: total, 47. At the present time not less than a million spindles and 10,000 persons are at work throughout India.

CHAPTER II.

FLAX, LINEN, AND JUTE.

THE flax and linen trade gives occupation, according to the Census tables, to—

	Males.	Females.	Total.
England	7,364	10,629	17,993
Scotland	15,145	26,863	42,008
Ireland	27,167	22,674	49,841
Total	49,676	60,166	109,842

by which it appears that Ireland carries off the lion's share in point of numbers. The average ages in England of the workers were—

	5–	10–	15–	20–	25–	35–	45–	55–	65–	75
Males ..	38	780	850	715	1280	1118	1042	844	499	198
Females ..	59	1676	3239	1959	1853	936	543	225	104	35

In Scotland—

	5–	10–	15–	20–	25–	35–	45–	55–	65–	75
Males ..	16	1696	2086	1484	2199	2191	2335	1768	1067	303
Females ..	26	3643	7336	5043	4458	2660	1814	1057	615	211

In Ireland—

	5–	10–	15–	20–	25–	35–	45–	55–	65–	75
Males ..	72	1845	4796	3867	6026	4121	2812	1980	1185	456
Females ..	66	2078	6437	4929	4560	1709	964	964	660	299

These tables show that a large majority, occupied in flax and linen, are young persons and children. To these numbers might be added, with justice, a considerable body of agricultural labourers in the North of Ireland who are engaged in cultivating the flax crop.

The flax manufacture is, like most of the other textiles, very much localized, Belfast and Leeds being the two chief centres of the trade, although there is also a good deal of flax-spinning in the counties of Cumberland and Dorset (Bridport), and, in Scotland, in those of Fife and Forfar. The Factory Returns of 1871 give the following list, classifying them as (*a*) spinning, (*b*) weaving, (*c*) spinning and weaving:—

	No. of Factories.	No. of Carding Machines.	No. of Spinning Spindles.	No. of Doubling Spindles.	No. of Power Looms.
England ..	155	560	369,768	32,520	3,048
Scotland ..	191	633	317,085	13,514	17,419
Ireland ..	154	496	866,482	20,178	14,834
Total ..	500	1,689	1,553,335	66,212	35,301

employing—

	Children under 13.	Males up to 18.	Above 18.	Females above 13.	Total.
England ..	1,390	1,744	4,796	11,886	19,816
Scotland ..	1,970	4,235	8,632	35,080	49,917
Ireland ..	1,601	5,560	11,307	36,571	55,039
Total ..	3,961	11,539	24,735	83,537	124,772

Mr. Redgrave gives * a comparative table of the increase of flax factories:—

	1851.	1861.	1871.	1875.
No. of factories	393	439	598	620
„ spinning spindles	965,031	1,252,236	1,710,295	1,712,001
„ power looms ..	6,092	15,348	39,738	51,601

The proportion of spinning spindles to factories was 2455 in 1850, to 2760 in 1875, and of the power-looms 15 in 1850, to 82 in 1875. The power-loom weavers had increased thus:—

In 1861	11,173
„ 1871	25,706
„ 1875	33,393

So that the proportion of looms to weavers had slightly increased also, viz. from $1\frac{1}{3}$ in 1861 to $1\frac{1}{4}$ in 1875. As compared with the cotton weavers (p. 9), flax weavers have been increasing instead of declining.

* Factory Report, 1875.

Mr. Redgrave also shows the increase of the workers generally:—

	1850.	1861.	1871.	1875.
Children up to 13 ..	1,581	3,644	5,562	12,678
Males 13 to 18	8,012	8,754	13,666	15,195
„ above 18	11,998	16,646	28,268	31,344
Females above 13 ..	46,843	65,059	97,896	112,570

The proportions borne by each class of ages to the total are—

	1850.	1875.
Children	2·3	7·
Males 13 to 18	11·1	9·
„ above 18	17·	18·
Females	69·9	66·

The details of the flax trade differ from the cotton trade *in initio*, from the fact that a large proportion of the raw material is of native growth, the remainder that is used in the factories being made up by supplies from Russia, Belgium, Italy, and other countries. Mr. Charley, M.P., has told us * about the Irish flax crop, its times and seasons, and the means that are taken for pulling the plant, "rippling," or separating the seed capsules from the stems, steeping or "retting," "grassing," and lifting the flax. So far the details are those of an agricultural kind, though the manufacturing stage may be said also to commence in the country districts where the flax is grown, in the shape of the "scutching" mills, to which the flax straw is taken

* 'British Manufacturing Industries.'

by the farmers in the neighbourhood, to be broken and roughly cleaned and prepared for the flax spinning factory. In 1874 the number of scutching mills in Ireland was given at 1380, viz. Ulster 1295, Leinster 25, Munster 31, Connaught 29. They are, however, declining in number (in 1872 there were 102 more), pointing to the fact that not so much flax is grown as heretofore. Cookstown, Ballymena, and other places in Ulster, are the centres of the flax markets and these scutching mills, which latter, both in their machinery and external appearance, are sorry places enough. The workers in them are, the scutchers, men and boys on piecework, who get paid so much per stone, and, therefore, are induced to labour at all kinds of untimely hours; and "strickers," who make up the flax into handfuls for the scutchers, as it comes from the rolls when it is broken. Women frequently superintend these rolls, and as they are almost entirely unprotected, bad accidents are not uncommon from the flax and tow catching the dress and dragging the worker in. The mills themselves, being built without the least regard to ventilation, are full of dust and flax spiculæ, which tend to produce chronic cough and phthisis, while ophthalmia and opacity of the cornea are also common, according to the testimony of Mr. Hamilton, a certifying surgeon in the district.* The scutching season, when these mills are busiest, is from September to April. Mr. Hamilton gives a miserable picture of the dirty, ill-fed operatives, and mentions that "in some of the mountainous districts they have of late years become addicted to æther drinking, as a rapid and

* Factory Reports, 1875.

cheap stimulant, which they can procure in any quantity at the small country grocers. Sunday is too often spent by the parents and grown-up children in drinking bad whiskey." Indeed the intemperance of this class is such, that to be "as thirsty as a scutcher" has passed into a proverb.

The factory life of the flax commences with the spinning, in which the first process is the rough sorting, followed by cutting with a circular saw, so as to divide the flax into three lengths, which are collected into separate heaps or "stricks." Boys generally superintend these saws, which, up to 1874, were exposed, and frequently caused considerable laceration to the hands of the workers. In that year, however, a Mr. McComb invented a safety-guard by which the cutting edges were fenced in, without deteriorating from their efficiency. The operation of sorting is almost always performed by men, with a comb, and except for yielding a fair amount of dust, contains nothing peculiar in it. "Heckling," which comes next, is a most important process, in which the bundles of flax are fixed in clams by screws, and made to travel backwards and forwards between pairs of combs or "heckles," which comb out the tow or short fibres, and arrange the long fibres parallel. By this the appearance is very much improved, the fibres assuming a silvery grey or yellowish colour, and looking like silk. Heckling, which is performed by girls and boys, is always a very dusty operation, and requires a good deal of continuous labour. In the Report of Messrs. Bridges and Holmes, it is said that "the ill effects of the heckling efforts upon the boys (technically called

machine boys) engaged in it are shown in spasmodic attacks of cough, during which the boy generally holds on to the machine to assist the efforts of coughing; an effort so familiar to workers, that a boy who is observed doing so, is said to be 'poucey,' from the 'pouce'* or dust by which the cough is provoked. This dust is both fibrous and granular, but the latter very largely preponderates. It is for the most part a fine, soft, and palpable powder, proceeding evidently in great part from the putrefying process to which the flax plant has been subjected. Mixed with these organic particles there is, doubtless, a considerable portion of pulverized mud." This peculiar affection is spoken of as being very common in the Belfast mills by Dr. Charles Purdon,† the certifying surgeon, who also mentions, *en passant*, that the machine boys are largely addicted to chewing tobacco, consuming from half an ounce to one ounce each week. But either this state of things has improved, or it is more common in Belfast than in Leeds or Dundee, which are the other great centres of the flax trade; for Messrs. Marshall, who are probably the largest spinners in the world, assure me that there is no such thing in their mills; and certainly the girls in their heckling room, as in all the other departments, appeared to be healthy and happy enough. The sorting, which succeeds the heckling, is performed by men, who also hand-heckle the flax, so as to pass it over finer combs than can be done by machinery. Although apparently simple, it is not an easy operation, and demands a long apprenticeship,

* Query. Is this derived from *poussière*?

† Factory Reports, 1870.

so as to be able to give the peculiar touch desired. The heckled flax is next brought to the "gill frame" to be spread and drawn, being fed on to a feeding cloth or endless apron, and then delivered to the gills, whence it issues as a sliver. This is taken in the can to the drawing frame, where uniformity is given to the ribbon, and thence to the roving frame, as in cotton and other textiles: and this is the last operation previous to the spinning.

There is, however, first of all, another portion of the process to be considered, viz., the preparation of tow, which is the short and coarse fibre of the flax produced during its cleansing, and which contains a great deal more dust, dirt, and woody fibre. This, after being sorted, is carded just like cotton, except that it is on a rougher scale, and makes infinitely more dust. The tow-carding room is the worst place in the mill, and the clothes of the workers are generally loaded with the dust which floats thickly through the room, notwithstanding the adoption of powerful exhaust fans in the roof or the external walls. What with the dust and the damp from the steam jets, it is the most unhealthy employment in flax spinning; but, though efforts have been repeatedly made to induce the women to wear respirators, it has been without success.

After the carding, the tow goes through the other processes like the flax, and is then taken to be spun, the great difference, both in this and the flax, to other textiles being, (1) the use of throstles instead of mules, (2) the comparatively slow speed of the spindles, and (3) the practice of wet spinning, by first of all drawing the roving through a trough of warm water, before it is spun.

The object of this is, to soften the fibre by dissolving the gum; so as to prevent its breaking, and, the coarser the yarn, the more heat and moisture are required. The result is, to produce not only an exceedingly warm atmosphere, but also a very damp one, owing to the spray that is sent off from the spindles, it being well known that the flax spinners used to get their clothes saturated with moisture, and to suffer accordingly. This evil was so strongly recognized, that, in the Factory Act of 1844 (7 & 8 Vic. c. 15), special provision was made for the more efficient sanitary supervision of children in wet spinning flax mills. To a very great extent, the evil is remedied by a splash-board placed in front of the spindles, so as to shield the worker from the damp, which in well-regulated mills can be, and has been, reduced to a minimum, while, with proper ventilation, the temperature rarely should exceed 70°. Where these precautions as to temperature are not taken, mischief arises from the alternations from the hot damp spinning room to the outer air, particularly in the case of girls with delicate chests. Dr. Purdon, speaking of the Irish mills,* mentions that the "doffers" (usually full-time girls, who are learning to be spinners), on their first being employed at flax mills, are attacked with a kind of fever, which, however, runs a specific course and ceases after a few days. It is probable that the insufficient diet to which many of the Irish children are accustomed may have a predisposing tendency to these ailments, from which a well-nurtured child would be free.

But, as compared with other textiles, there is no

* Factory Reports, 1873.

doubt but that the flax trade is the most unhealthy, and no person should work in it who has any pulmonary weakness. Dr. Purdon, to whom I must again refer, says, in his evidence,* that "nearly three-fifths of those that die annually in this trade are taken off by diseases of the respiratory organs. In the preparing rooms, the death-rate from chest affections is exceedingly high, being 31 per 1000, and amongst the hecklers, the deaths annually amount to 11·1 per 1000, amongst the weavers to 9 per 1000. In wet spinning, the children often get their clothes wet with the spray that comes off from the spindles, and on coming out of the hot room with their clothes damp in the evening, it brings on bronchial affections." The same observer states† that the average life of flax carders is 45·7 years, and the average length of time employed 16·8 years; of preparers, average of employment, 28·7; of dressers, average of employment, 16·6. From an analysis of the fibre, it seems that 100 parts of flax contain 13 of silica. From the preceding facts it would appear, that the Belfast mills are not in that state of sanitary arrangement in which they ought to be.

It seems that in the Scotch districts (Dundee and Arbroath) where much coarse sailcloth is made, most of the spinning is dry, and though the evil of damp is not present, that of dust is. This, however, is partly counteracted by the slow speed at which the spinning is carried on, and by the sanitary arrangements of the large Dundee mills, which are very good. Linen

* Factory and Workshops Act Commission, 1875.

† Longevity of Flax Mill Operatives, 1875.

weaving is like most other kinds, and the description of the cotton weavers will stand for this; the chief difference is that the weavers, who are mostly women, rarely have to mind more than two looms, and frequently not more than one.

The Registrar-General's tables of mortality do not furnish us much information as to the flax workers in general. The deaths of males in England for 1871 were 191, thus :—

5–	10–	15–	20–	25–	35–	45–	55–	65–	75
..	..	3	13	11	16	28	38	42	40

The Factory Returns of 1871 give the following table as to weekly wages, a list of which I append from the two spinning districts of Leeds and Dundee :—

	Leeds.		Dundee.	
	s. *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*
Overlookers	20 0	to 40 0	25 0	to 35 0
Warehousemen ..	16 0	„ 18 0	15 0	„ 25 0
Roughers	20 0	„ 25 0		
Hecklers	5 0	„ 6 6	7 6	„ 10 6
Sorters	20 0	„ 25 0		
Preparers	6 0	„ 7 3	5 0	„ 8 0
Spinners	6 3	„ 7 3	7 0	„ 13 0
Doffers	5 0	„ 6 6		
Reelers	8 0	„ 10 0	8 0	„ 15 0
Dressers			20 0	„ 25 0
Carders	8 6	„ 10 0		
Combers	8 0	„ 9 0		
Bundlers	18 0	„ 20 0		
Winders			7 0	„ 15 0
Weavers	15 0		8 0	„ 16 0
Warpers	11 0			

In 1876 they were as follows:

	Dundee.		Belfast.	
	s. *d.* *s.* *d.*		*s.* *d.* *s.* *d.*	
Overlookers	25 0 to 35 0			
Warehousemen ..	20 0 „ 30 0			
Machine boys			6 0 to 7 0	
Hecklers	8 0 „ 11 0			
Roughers			18 0 „ 20 0	
Sorters	11 0		24 0	
Preparers	10 0		5 6 „ 7 3	
Spinners	10 6 „ 15 0		5 6 „ 9 9	
Doffers	7 0 „ 8 6			
Reelers	9 0 „ 17 0		7 6 „ 9 6	
Engine-men	21 0 „ 26 0			
Mechanics	22 0 „ 32 0			
Dressers	20 0 „ 29 0		11 3 „ 20 0	
Half-timers	3 0			
Carders	10 0			
Bundlers	10 0 „ 20 0			
Winders	9 0 „ 16 0		8 0 (piece-work)	
Weavers	10 0 „ 20 0		6 0 to 10 0 (piece-work)	
Warpers	13 0 „ 16 0		7 0 to 12 0	
Tenters			16 0 and 5% on amount of weaver's wages.	
Oilers			15 0 to 30 0	

The commercial statistics of flax are, for the last decade :—

IMPORTS.

Flax, Dressed or Undressed.

Year.	Quantity.	Value.
	cwts.	£
1866	1,277,491	3,794,423
1867	1,261,488	3,732,127
1868	1,546,816	4,461,315
1869	1,233,002	3,488,957

Year.	Quantity.	Value.
	cwts.	£
1870	1,998,494	5,181,486
1871	2,142,482	5,030,431
1872	1,695,644	4,431,983
1873	1,922,678	4,801,458
1874	2,026,113	4,939,706
1875	1,464,735	3,884,973
Tow or Codilla of Flax or Hemp.		
1866	288,571	699,773
1867	203,149	478,270
1868	322,565	703,282
1869	371,130	779,032
1870	432,076	859,983
1871	518,483	847,488
1872	380,243	663,940
1873	320,632	569,858
1874	406,500	695,613
1875	374,566	613,634
Hemp and other substances (except Jute).		
1866	996,219	1,713,277
1867	869,571	1,634,965
1868	1,046,135	2,055,481
1869	1,022,110	1,907,959
1870	1,079,608	2,034,326
1871	1,245,019	2,267,571
1872	1,115,946	2,111,240
1873	1,252,515	2,321,706
1874	1,236,475	2,190,124
1875	1,321,559	2,214,666

Our principal sources of supply are Belgium (neighbourhood of Courtrai) for dressed flax; Russia, Belgium, and Holland, for rough or undressed, and Russia for tow or codilla:—

EXPORTS.

Linen Yarn.

Year.	Quantity.	Value.
	lbs.	£
1866	33,608,171	2,374,132
1867	34,002,479	2,449,394
1868	32,769,306	2,308,494
1869	34,570,316	2,332,088
1870	37,239,314	2,237,492
1871	36,235,625	2,218,129
1872	31,187,051	2,131,071
1873	28,734,212	1,976,830
1874	27,154,906	1,716,231
1875	27,887,681	1,855,684

Linen, White or Plain.

	yards.	
1866	232,837,903	7,891,743
1867	198,175,721	6,431,059
1868	197,635,508	6,173,898
1869	204,658,286	6,022,230
1870	210,405,228	6,271,734
1871	207,041,820	6,377,010
1872	233,838,338	7,241,338
1873	195,404,195	6,204,800
1874	180,926,285	5,876,864
1875	186,763,770	5,904,958

Linens, Printed, Checked, or Dyed.

1866	15,998,705	659,439
1867	8,244,454	334,427
1868	8,887,854	344,902
1869	7,131,957	268,211
1870	12,405,841	421,178
1871	9,296,121	311,538
1872	7,397,940	233,736
1873	8,197,598	260,639
1874	8,987,132	287,754
1875	13,742,124	470,295

Most of our dressed and undressed flax goes to the United States; of the linen yarn, to Spain and the Canaries, Germany, Holland, and Belgium; of plain or unbleached linen piece goods, to the United States, West Indies, Australia, and North America; of printed linen goods, damasks, and diapers, to France, United States, and Australia.

The jute trade is, in many respects, so similar to that of flax, that, except for the statistics, it need not detain us long. As far as the numbers engaged in it, it will be better to group together, not only the jute spinners proper, but also those who are occupied in elaborating the material into canvas, sailcloth, sacking, bags, &c. The Census tables give for England:—

	Males.	Females.	Total.
Jute manufacture	279	..	279
Canvas and sailcloth ..	805	260	1065
Sacking and bag	714	1515	2229

for Scotland:—

	Males.	Females.	Total.
Jute manufacture	1395	3606	5001
Canvas and sailcloth ..	375	660	1035
Sacking and bag	349	977	1326

The Factory Returns of 1874 give the following summary of the jute trade:—

	No. of Factories.	No. of Spinning Spindles.	No. of Power Looms.
England	15	21,754	927
Scotland	84	185,419	8,325
Ireland	11	13,738	347
Total	110	220,911	9,599

employing—

	Children up to 13.	Males up to 18.	Above 18.	Females above 13.	Total.
England ..	361	501	779	3,292	4,933
Scotland ..	2,920	2,980	5,380	19,613	30,893
Ireland	12	189	285	1,608	2,094

With the exception of a few jute factories in London and elsewhere, and also in Belfast, the Scotch districts —Dundee, Glasgow, and Arbroath—monopolize the whole trade.

Formerly jute used to be spun as flax, which it resembles in fibre, though much coarser. It was heckled, so as to get as much as possible of the fine fibre, and separate it from the coarse. The latter, however, so greatly predominated, that it was found to be an useless expense, and it was, therefore, treated like tow, and placed at once in the carding engine. As it is even coarser than tow, one would naturally think that more dust would arise, and that the trade would surpass the flax trade in unhealthiness; but this is not so, owing to the necessity for saturating the jute with oil, so as to

make the coarse and brittle fibres flexible. Its very roughness, therefore, has proved a sanitary safeguard to the workers. The busy town of Dundee, with its population of 90,425, may be said to have arisen from jute, but I fear that it has reached its highest point of prosperity, as far as this particular trade is concerned. For one thing, a large jute manufacturing trade has sprung up at Calcutta, where there are no laws to regulate the hours of labour in the factories, and the consequence is, that not only is the Indian market taken away from Dundee, but the Indian manufactories are supplying San Francisco, and even offering sackings and other goods in London at a cheaper rate than they can be produced at Dundee! There are now in and about Calcutta ten jute-spinning mills, employing 2500 looms; and in the whole of Bengal, there are upwards of 4000 looms. The prospects of the Indian mills are so good, that a Dundee manufacturer has recently transferred his operations to the banks of the Hooghly. Another profitable market, viz. that of Dunkirk, to which large quantities were sent annually from Dundee, for the benefit of Northern France, is not only closed, but manufacturers formerly residing at Dundee have actually built mills at Dunkirk, finding that they can obtain labour cheaper, with an absence of trade disputes and strikes. The unkindest cut of all is, that Dunkirk is supplying Dundee with jute goods, and thus the latter town is being hoist with its own petard. If we compare these facts with those of Sheffield, the increase of the cotton trade in India, the importation of woollen yarn and of iron from

Belgium, of locomotives from the Creuzot works in France, and of ready-made door and window frames from Norway, we shall find ample food for reflection and some cause for alarm.

The divisions of labour in the jute mills are much the same as in other textiles, and the wages, as given in the Factory Returns of 1871, and in 1876, are :—

	1871. Per Week.	1876. Per Week.
	s. *d.*	*s.* *d.*
Preparers	6 6 to 8 0	10 0
Spinners	8 6 „ 9 6	12 0 to 15 0
Piecers	4 6 „ 7 0	9 0 „ 10 0
Shifters	3 9 „ 5 9	7 0 „ 8 6
Bobbin carriers ..	4 6	7 0
Winders	8 0 „ 12 0	9 0 „ 16 0
Reelers	8 6 „ 11 6	13 0 „ 16 0
Warpers	8 0 „ 13 0	13 0 „ 16 0
Mechanics	25 0 „ 28 0	22 0 „ 32 0
Oilers	15 6	11 0
Tenters	25 0	30 0 „ 35 0
Assistant ditto	18 0	21 0 „ 24 0
Weavers (girls) ..	9 3 „ 12 0	10 0 „ 20 0
Half-timers	2 0	3 0
Twisters	9 3	12 6
Carders	8 6	10 0
Rovers	8 6	13 0
Drawers	8 0	10 0
Feeders	8 3	11 6
Bundlers	11 0	10 0 „ 20 0

The jute imported during the last ten years was—

Year.	Quantity.	Value.
	cwts.	£
1866	1,625,903	1,476,244
1867	1,582,611	1,414,321
1868	2,182,521	1,936,230

Year.	Quantity.	Value.
	cwts.	£
1869	2,467,817	2,143,100
1870	2,376,690	2,326,910
1871	3,454,120	3,729,735
1872	4,041,018	3,954,698
1873	4,624,918	3,619,989
1874	4,270,164	3,553,179
1875	3,416,617	2,575,512

Our principal source of supply of jute is British India, Bengal, and Burmah:—

EXPORTS.

Jute Manufactures.

Year.	Quantity.	Value.
	yards.	£
1866	19,394,926	361,857
1867	26,745,187	455,396
1868	43,081,332	706,966
1869	50,127,853	742,801
1870	51,920,808	789,657
1871	62,310,463	1,026,759
1872	84,452,457	1,486,484
1873	95,935,108	1,590,850
1874	112,810,415	1,679,766
1875	101,105,579	1,404,997

Jute Yarn.

	lbs.	
1866	7,761,391	128,704
1867	7,520,911	117,028
1868	8,108,101	126,045
1869	8,041,082	126,691
1870	12,669,948	196,465
1871	13,710,957	262,057
1872	12,715,969	261,239
1873	12,263,805	206,521
1874	15,724,988	245,784
1875	15,942,618	225,836

Sailcloth and Sails.

Year.	Quantity.	Value.
	yards.	£
1866	6,795,777	361,027
1867	4,942,893	265,397
1868	3,591,020	200,401
1869	3,002,311	177,677
1870	3,659,627	192,862
1871	4,129,532	222,675
1872	3,783,126	225,291
1873	4,521,683	263,276
1874	4,769,047	286,339
1875	4,067,278	243,312

Of jute manufactures, Germany and the United States take the largest quantity, and of sailcloth, Germany and Sweden.

CHAPTER III.

WOOLLENS AND WORSTED.

NEXT to the cotton trade, that of woollens and worsted is the most important textile in Great Britain, employing, according to the Census tables:

MALES.

	Woollens.	Worsted.	Stuff.
England	71,683	34,053	4,619
Scotland	14,170	511	..
Ireland	2,524	..	..

FEMALES.

England	56,781	60,713	1,747
Scotland	13,180	937	..
Ireland	1,436	..	..

In addition to these formidable numbers, there are many others classed in the same group, engaged in subsidiary employments, a list of which will be found at p. 2; and the total of all those amounted to:

	Males.	Females.	Total.
England	128,984	124,506	253,490
Scotland	18,402	23,815	42,217
Ireland	2,852	12,846	15,698
Total	150,238	161,167	311,405

The ages of the English workers in the woollen cloths were:

	5–	10–	15–	20–	25–
Males	298	6,456	11,176	8,477	14,018
Females ..	261	7,304	14,964	11,207	10,912

	35–	45–	55–	65–	75
Males	10,906	9,185	6,529	3,069	1,069
Females ..	5,643	3,429	1,779	946	336

It will be noticed that there is a tolerable equality in the numbers of each sex, and that a large proportion of both consists of young people.

The Factory Returns divide the trade into three sections:

1. Wool.

	No. of Factories.	No. of Carding Machines.	No. of Spinning Spindles.	No. of Power-Looms.
England	1,550	10,462	2,071,931	37,356
Scotland	218	1,010	421,489	10,543
Ireland	61	237	28,348	241
2. Shoddy.				
England	120	524	133,211	2,690
3. Worsted.				
England	599	291	1,766,636	63,345
Scotland	28	206	53,740	1,201
Ireland	3	..	768	10
Total	2,579	12,730	4,476,123	115,386

Employing in all three classes:

	Children up to 13.	Males, 13 to 18.	Males above 18.	Females above 13.	Total.
England	24,297	20,600	63,058	99,755	207,710
Scotland	128	2,927	8,140	17,773	28,968
Ireland	..	151	694	718	1,563
Total	24,425	23,678	71,892	118,246	238,241

The apparent discrepancies between the Census and the Factory Returns is explained by the fact that there is, particularly in Scotland and Ireland, an immense amount of labour connected with the woollen trade which did not come under the Factory Returns, such as wool spinners and knitters at home, both of whom figure largely in the former tables; and although textile labour is usually associated in our minds with factory life, we are bound to recognize the domestic conditions of work also. Mr. Redgrave gives us * a comparative statement of the progress of the wool and worsted trades, and tells us that the number of factories was:

	1850.	1861.	1871.	1875.
Wool	1,497	1,679	1,949	1,925
Worsted ..	501	532	630	629

With spinning spindles to the amount of:

	1850.	1861.	1871.	1875.
Wool	1,595,278	2,182,609	2,664,979	3,266,703
Worsted ..	875,830	1,289,172	1,821,144	2,182,792

* Factory Reports, 1875.

And of power-looms:

	1850.	1861.	1871.	1875.
Wool	9,439	21,770	50,830	58,527
Worsted ..	32,617	43,048	64,659	81,747

The proportion of spinning spindles to factories was:

	1850.	1875.
Wool	1,065	1,696
Worsted	1,748	3,154

And of power-looms to factories:

	1850.	1875.
Wool	6	30
Worsted	65	118

showing the tendency to concentrate machinery.

The number of power-loom weavers was:

	1861.	1871.	1875.
Wool	17,115	35,140	42,647
Worsted	28,787	35,746	39,937

showing a proportion of looms to each weaver of:

	1861.	1875.
Wool	1¼	1⅜
Worsted	1½	2

The number of *employés* for the different periods was, in the wool:

Year.	Children up to 13.	Males up to 18.	Above 18.	Females above 13.
1850	7,094	11,884	28,655	26,810
1861	5,969	11,213	35,179	34,622
1871	6,021	14,197	47,302	61,426
1875	8,588	13,972	49,169	66,324

and in worsted:

Year.	Children up to 13.	Males up to 18.	Above 18.	Females above 13.
1850	9,956	7,695	15,185	46,901
1861	13,178	6,614	18,619	47,652
1871	18,306	9,481	24,950	56,280
1875	29,828	11,259	31,622	69,388

The first operations to which the wool is exposed, after it has come in from the woolstapler into the factory, are, washing, scouring, and picking, the scouring being done by machinery so as effectually to get rid of the grease in the fleece. After being dried, the "picking" is performed by passing the wool through the blower, or the "willowing" machine, the object being to separate all dirt and refuse, together with the coarser fibres, which, however, are carefully taken up again and worked in subsequently. While the willowing is going on, the wool is being oiled with almost invisible sprays of oil, but this is sometimes done by placing the wool on an endless apron and passing it under an oiled brush. The picking and blowing is

usually a woman's work, and as the machine is pretty nearly self-acting, the occupation is not heavy, and, save for the dust, and, in the case of black wool, a good deal of flue, there is not much that is unpleasant about it. At this stage of the proceedings, the wool is mixed, or "blended," when required, with commoner materials, such as mungo (pickings of broadcloths) or "shoddy" (the pickings of all sorts of old textile odds and ends). To the shoddy mills I shall refer a little later on. The chief difference in the details between cotton and wool spinning is, that the latter, after being carded, is taken direct to the mule, without the intermediate stages of drawing and roving. The first carding, too, is called "scribbling," the wool being fed on to the apron of the scribbler, on the other side of which it is taken up by the carding engine. The being able to dispense with some of these operations explains the fact that the number of children (p. 59) employed have so slightly increased since 1850. As a fact, they have increased, but when we look at the much larger number of spindles, the proportion is so small that it is tantamount to a decrease. "We may give the example of a carding room where we found ten sets of engines at work. All these were under the care of nine persons (all women and boys), who seemed to us by no means hard worked. Before the self-feeding machinery was introduced, the same work would have occupied ten men (slubbers), ten women (feeders), and from twenty to thirty half-timers, or other young persons, as piecers."* Mule-spinning for woollens being a good

* Messrs. Bridges and Holmes' Report, 1873.

deal slower than for cottons, one spinner is enabled to superintend two mules at once. Nor, as a rule, does piecing require such continuous strain on the attention as cotton, as the threads do not break so much; black wool, however, demands an extra sharp sight from the piecer. Neither does wool yarn require so warm a temperature as cotton yarn; and the good results of this are shown in the improved sanitary conditions of a woollen as against a cotton mill, the former being undoubtedly the most healthy of the textiles as far as the operatives are concerned. The same general character applies to the weaving, the looms being a good deal broader than those of cotton, and each requiring one weaver to look after it. From the comparative slowness of the motion, there is less dust, vibration, and noise.

After the weaving is at an end, the cloth undergoes several important processes before it is "finished," the first of which are a series of "pickings," principally by women, so as to remove double threads, knots, or any other inequalities. The first is called "raw picking," the second "burling," the third "finishing picking." It is said to be trying to the eyes; although in the case of thick cloths, the touch is so educated to the work, that an experienced picker depends almost entirely upon it. The cloth has now to undergo some rough treatment in the shape of "fulling," or "milling," by which, through the agency of wooden hammers or rollers, the fibres are made to contract or "felt." After being scoured, by being placed in a very uninviting composition, it is dressed,

or "gigged," the object being to raise up the surface of the cloth by means of teazles. This raised surface is then cut or "sheared," principally by boys, so as to give a smooth gloss; and after sundry manipulations, pressings, and brushings, the cloth is packed ready for sale.

I should mention here, that some of the varieties of wool do not appear to be so healthy as regards manipulation as others. The alpaca and mohair wools (produced from the llama) appear to contain a considerable quantity of mineral dust, which affects the sorters so far as to give rise to a so-called "sorter's disease." The bales are opened in a specially arranged trellis-floored room, by which the greater portion of the dust is conveyed away; but still the operatives in this department are liable to "an acute congestion of the lungs, followed by a rapid failure of the heart and circulation, leading, in a large number of cases, to death within two or three days." * It appears, however, to be principally confined to sorters of irregular habits and failing constitutions.

As Lancashire is the head-quarters of the cotton trade, so is the West Riding for woollens, Leeds, Bradford, Dewsbury, Huddersfield, and Rochdale, being the localities in which they most abound. The trade, however, is an important one on the banks of the Tweed, such as at Hawick and Galashiels; and, again, in the West of England, in the Stroud valley, occupying the slopes and dingles of the Cotswold hills,

* "On so-called Sorter's Disease," by W. H. Ellis, M.R.C.S.

and on the banks of the Avon, giving occupation to the populations of Bradford, Trowbridge, and Frome. Probably no branch of the textiles has undergone such alteration for the better, as regards the workers in it. Instead of the miserable, ill-arranged mills which formerly abounded, handsome buildings, almost palatial in their structure, and with every modern improvement, are now to be seen in many parts of the clothing districts. It is, however, in the treatment of the operatives that the most striking changes are found.

I extract the following from evidence given before the Factory Committee of 1833, which needs no comment: "....Her child works at a mill nearly two miles from home, and I have seen that child coming from its work this winter between ten and eleven in the evening; and the mother told me that on one occasion the child had been up by two o'clock in the morning, when it had only arrived from work at eleven; it had then to go the two miles to the mill, and stay at the door till the overlooker came to open it....

"*Q.* What has been the treatment which the children received at the mills?

"*A.* They are so cruelly treated that they dare not for their lives be too late at their work in the morning. When I have been at the mills in the winter season, when they are at work in the evening, the very first thing they inquire is, 'What o'clock is it?' If I should answer 'seven,' they say, 'Only seven! it is a

great while to ten; but we must not give up till ten o'clock, or past.' They appear in such a state of apathy and insensibility as not to know whether they are doing their work or not; they usually throw a bunch of ten or twelve cordings across the hand, and take one off at a time; but I have seen the bunch entirely finished, and they have attempted to take off another when they have not had a cording at all.

"*Q.* Do they make mistakes in piecing when thus fatigued?

"*A.* Yes; the errors are, that they are apt to place the cording obliquely, which causes a flying and makes bad yarn; and when the billy-spinner (overlooker) sees that, he takes his strap or the billy-roller (a heavy rod two or three yards long, with an iron pivot at each end), and says, 'D—n thee, close it, little devil, close it,' and then he smites the child with the strap or the billy-roller.

"*Q.* How are they beaten?

"*A.* That depends on the humanity of the billy-spinner; some have been beaten so violently that they have lost their lives in consequence, and even a young girl has had the end of a billy-roller jammed through her cheek. I have seen them take the roller and rap them on the head, making their heads crack so, that you might have heard the blow at a distance of six or eight yards, in spite of the din of the machinery."

From another witness we have the following:

Q. "Have you remarked that cases of deformity are very common in Bradford?

A. "They are very common. I have the names and addresses of two hundred families that I have myself visited, that have all deformed children; and I have taken particular care not to put down one single individual to whom it had happened by accident, but all whom I judge to have grown crooked by the practice of piecing and of throwing up the right shoulder, and of bending the right knee."

These are only very small samples of similar acts of inhumanity and brutality that prevailed in the textiles, and particularly the woollen mills, of those days; and it is to the Earl of Shaftesbury (then Lord Ashley) that the operatives of the North of England are mainly indebted for the legislation which this inquiry evoked.

I have shown at p. 27 the comparative healthiness of the woollen trade as compared with other textiles, although, at the same time, it is stated that the death-rate of women between fifteen and forty-five in the cloth districts stands higher than in the English life table, being 1009 per 100,000 per annum in Huddersfield, and 941 at Dewsbury, during the years 1870–1. The Registrar-General gives the following table of deaths of English males for 1871:

Total.	5–	10–	15–	20–	25–	35–	45–	55–	65–	75
1381	1	9	71	60	147	108	165	231	313	276

The average weekly earnings of operatives in the woollen mills are:

	1871.		1876.	
	s. *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*
Wool washers	16 0			
Card hands	10 0		12 0	to 14 0
Comb hands	10 6			
Layers on for scribblers ..	7 6	to 12 0		
Card setters or cleaners ..	17 0	„ 20 0	18 0	„ 24 0
Woollyers (men)	15 0	„ 20 0	20 0	„ 25 0
Self-acting mule minders ..	15 0	„ 23 0	26 0	„ 30 0
Self-acting mule piecers ..	5 0	„ 7 0	8 0	„ 12 0
Self-acting mule piecers (half-timers)	2 6	„ 3 6	3 0	„ 4 0
Rag-grinders	20 0	„ 21 0		
Warpers	12 0	„ 18 0		
Power-loom weavers	10 0	„ 16 0	14 0	„ 20 0
Wool sorters	18 0	„ 26 0	25 0	„ 30 0
Fulling millers	20 0	„ 25 0 and 35 0	22 0	„ 30 0
Cloth raisers, cutters, pressers, tenters, and drawers	20 0	„ 24 0	28 0	„ 35 0
Burlers	9 0	„ 12 0		
Dyers			24 0	„ 30 0
Menders and stumpers (women)	13 0			
Oil extractors	24 0			
Mechanics	27 0	„ 30 0		
Rag pressers	8 0			
Hand spinners	20 0	„ 28 0		
Giggers	18 0	„ 23 0		
Machinists	23 0		22 0	„ 25 0
Hand raisers	16 0	„ 22 0		
Foremen	33 0	„ 35 0	30 0	„ 40 0

In alpaca wools the earnings were (1876):—

Wool sorters	31*s.*
„ washers	18*s.* to 19*s.*
„ combers	16*s.* „ 17*s.*

Spinners and drawers	4*s.* to 11*s.*
Overlookers	30*s.* „ 40*s.*
Weavers (men)	20*s.* „ 25*s.*
„ (women)	15*s.* „ 20*s.*
„ two looms	18*s.* „ 22*s.*
Overlookers	30*s.* „ 34*s.*
Mechanics	30*s.*
Joiners	30*s.*
Masons	30*s.*
Engine-men	19*s.* „ 30*s.*
Warehousemen	18*s.* „ 21*s.*
Dyers	22*s.* „ 24*s.*

The commercial statistics of the woollen trade are as follows:—

Imports of wool of sheep, lamb, alpaca, and the llama tribe. (Professor Archer, in his article on wool,* gives us an admirable *résumé* of the varieties of sheep which furnish wool to the trade.)

Year.	Quantity.	Value.
	lbs.	£
1866	239,358,689	17,550,871
1867	233,703,184	16,178,034
1868	252,744,155	15,120,498
1869	258,461,689	14,696,746
1870	263,250,499	15,812,598
1871	323,036,299	17,926,639
1872	306,379,664	18,523,350
1873	318,036,779	19,541,678
1874	344,470,897	21,116,184
1875	365,065,578	23,437,413

* 'British Manufacturing Industries.'

and of yarn for weaving—

Year.	Quantity.	Value.
	lbs.	£
1866	6,997,889	1,574,527
1867	5,514,947	1,089,350
1868	8,950,692	1,561,371
1869	9,587,631	1,677,834
1870	9,683,402	1,511,171
1871	11,665,465	1,097,289
1872	11,706,427	1,382,084
1873	13,169,662	1,496,463
1874	13,131,850	1,494,945
1875	11,700,928	1,327,887

Our alpaca, llama, and vicuna wools, come from New Granada, Peru, and Chili; and of sheep's or lamb's wool, the principal supplies are from Australia, South Africa, Bombay, and Scinde, and the southern parts of Russia.

On the other hand we export wool to Germany, Holland, France, &c. :—

Wool.

Year.	Quantities.	Value.
	lbs.	£
1866	9,732,683	895,356
1867	8,862,197	775,834
1868	9,510,881	736,035
1869	12,410,225	922,159
1870	9,101,405	580,570
1871	11,957,282	828,799
1872	7,605,146	629,275
1873	7,034,745	620,848
1874	10,077,619	920,415
1875	10,536,523	928,264

YARN.

Year.	Quantities.	Value.
	lbs.	£
1866	26,577,694	4,547,043
1867	36,952,474	5,739,340
1868	42,799,410	6,203,174
1869	37,185,740	5,538,295
1870	35,536,848	4,994,249
1871	43,725,577	6,100,727
1872	39,734,924	6,110,138
1873	34,744,507	5,393,493
1874	34,981,008	5,558,560
1875	31,723,627	5,099,307

and of cloths, coatings, flannels, blankets, baizes, &c.:—

CLOTHS.

Year.	Quantities.	Value.
	yards.	£
1866	32,514,358	5,303,602
1867	31,189,209	5,327,375
1868	24,622,230	3,760,961
1869	28,218,489	4,275,858
1870	32,404,719	4,749,165
1871	35,583,697	5,563,037
1872	40,734,224	6,991,718
1873	38,633,833	6,599,635
1874	40,331,686	6,642,222
1875	42,058,354	6,850,203
1866	14,488,240	1,161,615
1867	11,126,055	859,519
1868	12,727,805	963,866
1869	14,925,716	1,099,299
1870	14,985,389	1,078,983
1871	14,091,282	1,030,302
1872	15,022,122	1,104,835
1873	14,447,313	1,089,864
1874	16,004,436	1,318,007
1875	16,109,787	1,239,637

The United States, Germany, and France, are our best customers for broad cloths, coatings, and duffels; Australia and North America for narrow cloths and coatings; Brazil and Australia for blanketings; Australia and North America for flannels.

In the same group as the woollens must be placed the worsted manufacture, which is considerably more localized than the former, its chief seat being Bradford (Yorkshire), Halifax, Keighley, and the smaller towns in their neighbourhood. It is also carried on, though to a much smaller extent, in Scotland (Glasgow). The chief difference at the outset of the manufacture is, that, in worsted, only the long fibres of the long-woolled varieties are used; and, after being duly sorted, these are washed, dried, carded, oiled, and otherwise made ready for the combing machine, by which every chance of any short fibres (technically called "noils") remaining is entirely taken away. Finally, after passing through the drawing frames, the fibre is ready for spinning. The wool-combing machine, the invention of Mr. Lister, and a source of enormous fortune to that family, is one of the most ingenious machines in the textile trade, and has quite superseded the original method of combing by heat, which was usually done with charcoal braziers, and was a most unhealthy occupation.

The spinning department of a worsted factory resembles the throstle spinning of the cotton, with a few material differences in detail, one being, that when the full bobbins have to be taken off the spindles by the "doffers," and replaced by fresh

ones, the whole doffing force of the room is concentrated on the frame, as it is a matter of importance that the frame be not kept out of gear a moment longer than is necessary. But perhaps the alteration of greatest importance in worsted spinning has been the gradual increase in the number of spindles to the frame. In 1833 there were not more than 38 on a side; but additions have been made from time to time, until they reach 80, 90, 100, or more. This was looked upon as a great grievance by many spinners, who considered that more work was thrown on both foot and eye than could be well done. It is true that there are a considerable number of broken threads to piece in worsted spinning, although this very much depends on the degree of fineness of the yarn or the condition of the machinery; but the latter has been in general so vastly improved, that it has dispensed with a good deal of the more laborious portion of the work, while the temperature is almost always pleasant, and the rooms comparatively free from dust. In the weaving department, a worsted weaver never has more than two looms to look after, for the reason that knots or other faults have to be picked out as the yarn is being woven, and the loom, therefore, has frequently to be stopped to allow of this being done. Formerly one loom only was the custom, and the introduction of the second was the cause of much dissatisfaction. Time, however, gradually remedied this, together with the discovery that, as piecework was the fashion, the weaver could earn much higher wages with two instead of one loom.

I have already alluded to the splendid character of some of the woollen and worsted factories. A notable example is that of Saltaire, about four miles from Bradford, the establishment of Sir Titus Salt, Bart., who introduced into this neighbourhood the employment of alpaca wools. Saltaire is not only an exceptionally large place as regards the factory, but it is more especially noteworthy for the colony of work-people who live around it, and for whose well-being, in every possible way, the utmost pains appear to have been taken by their employers. An infirmary, mechanics' institution, almshouses, schools, library, park, and public dining hall, are special features of the little town. The dining hall, which accommodates 800 persons, is a self-supporting institution, the object being to ensure each visitor having a comfortable meal at the lowest possible charges—such as a cup of tea for a halfpenny, a bowl of soup for a penny, a plate of beef for twopence, &c. With such advantages as these, and with such an open, healthy situation, few factory operatives are better off than those of Saltaire, although perhaps more recent sanitary improvements have been adopted in mills of a later date. The health conditions of the worsted trade may be placed at a rather higher level than those of the woollens, although Messrs. Bridges and Holmes mention,* that the adult women of Bradford, Halifax, and Keighley, have a higher death-rate than the average, which is 866 per 100,000. In these three towns it is respectively 1048, 1135, and 1197; and if the latter town continues to

* Report on Textile Factories, 1873.

be governed in health matters by the same anti-vaccination authorities as have lately figured in so unenviable a manner, it is hard to say to what point the death-rate may not reach.

The weekly earnings of the worsted operatives are as follows:—

	1871.				1876.			
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
Wool sorters	20	6	to 30	0	24	0	to 30	0
„ washers and dyers ..	15	0	„ 18	0	20	0	„ 24	0
Gill tenters (women) ..	9	6	„ 10	0	11	0	„ 12	0
Card tenters	13	0			10	0	„ 15	0
Preparers (men)			..		17	0		
Drawers (women)	9	0	„ 10	6	10	6	„ 12	0
Twisters			..		10	6		
Spinners	7	6	„ 9	0	8	6	„ 9	6
Doffers and jobbers (boys)	8	0	„ 9	0	9	0		
Warpers (women)	14	0	„ 18	0	13	0	„ 15	0
Reelers	10	0	„ 12	0	10	0		
Overlookers	28	0	„ 30	0	28	0	„ 35	0
Sizers	16	0						
Warp dressers	21	0	„ 26	0	22	0	„ 24	0
„ loomers and twisters	14	0			15	0	„ 19	0
Weavers (women), two looms	10	0	„ 13	0	13	0	„ 18	0
Doffers and bobbin setters (half-timers)	1	9	„ 3	9	3	6	„ 4	0
Overlookers	28	0	„ 30	0	28	0		

The exports of worsted stuffs for the last ten years have been—

Year.	Quantity.	Value.
	yards.	£
1866	227,275,414	13,294,059
1867	200,469,996	12,144,998
1868	224,367,464	13,075,773
1869	250,062,934	15,130,340
1870	235,936,604	13,788,798

Year.	Quantities.	Value.
	yards.	£
1871	307,237,042	17,953,209
1872	344,968,689	20,905,163
1873	282,884,692	14,277,382
1874	261,135,081	11,888,072
1875	251,845,549	11,159,914

The manufacture of carpets is in itself an important section of the woollen trade, and employs about:

	Males.	Females.	Total.
England	7,877	3,691	11,568
Scotland	2,216	468	2,684
Total	10,093	4,159	14,252

The ages of the workers show a fair proportion of juvenile labour:

	5–	10–	15–	20–	25–	35–	45–	55–	65–	75
Males ..	19	478	1121	1097	1658	1515	1124	546	226	93
Females ..	5	475	1244	814	639	269	141	70	28	7

The carpet trade is, on the whole, tolerably scattered over the kingdom, though each locality is rather famous for some speciality. For instance, Axminster carpets are principally made, not at Axminster, where their manufacture first commenced, but at Wilton, near Salisbury, where also Brussels carpets are produced. Machine-made carpets, such as "patent Axminsters,"

are chiefly manufactured at Glasgow, Kilmarnock, and Dewsbury, while tapestry and velvet piles are to be found at Halifax and Kidderminster, which latter place produces also Brussels carpets, the "Kidderminsters," as Dr. Dresser tells us, having nearly died out from the town after which they are called.

The worsted is usually spun in factories away from the carpet works, though occasionally the spinning and carpet making are combined, so that the manufacturer can produce whatever kind of material he wishes. The actual processes of carpet making differ very much according to the kind, as to whether it may be a Brussels, a Wilton, or a tapestry; but these have been so fully described by Dr. Dresser, that I need only refer my readers to his article on the subject.* The classes of labour in making Wilton or Brussels consist, speaking broadly, of the designers, who are highly paid; the "putters on," or the men who place the patterns on the "lines"; the "stampers," or girls who prepare by stamping the cards for the Jacquard loom; and the weavers, who superintend the looms. The difference between a Wilton and a Brussels consists, technically, in this, that the surface of a Brussels is of loops, while in the former the loops are cut, thus giving it a beautiful velvet-pile appearance.

In the tapestry process, the operatives consist of the pattern drawers, the wool bleachers, the drum printers, dyers, and steamers, and the weavers, who, for tapestry looms, are mostly women. When females were first employed at Kidderminster for the tapestry weaving,

* 'British Manufacturing Industries.'

the weavers (who had previously been always men) were very indignant at the innovation, and gave so much trouble, that the manufacturers (Messrs. Brinton) determined to sever this department of the trade altogether from Kidderminster, and, as Heathcote removed his lace factory from Nottingham to Tiverton, they removed their tapestry factory to Leeds, so that the town and district of Kidderminster lost an important addition to its trade.

As a rule, carpet factories are on a large scale, and replete with every improvement both in mechanical and sanitary science, so that the operatives have but little to complain of.

The wages in 1871 were as follows, for sixty hours a week:

	s.	*d.*		*s.*	*d.*
Dyers (men)	16	0	to	18	6
Hand-loom weavers and beamers	20	0	„	25	0
Mechanics	26	0	„	32	0
Pattern drawers	25	0			
Tenters and sewers	22	0			
Ditto (women and girls)	7	0	„	9	9
Croppers, cutters, and cleaners ..	19	0			
Ditto (women and girls)	4	6	„	9	0
Winders and reelers (women) ..	9	0			
Ditto (girls)	4	6			
Power-loom weavers	26	0			
Carding and spinning (men) ..	17	6	„	32	0
Ditto (females)	6	6			
Spinners (females)	5	0			

In 1876, for 56½ hours a week, female workers earned from 7*s.* 6*d.* to 20*s.*; boys, 6*s.* to 14*s.*; weavers (men), 20*s.* to 50*s.*

The values of carpets and druggets exported in the last ten years were:—

	£		£
1866	1,217,682	1871	1,648,411
1867	1,101,986	1872	1,916,774
1868	1,099,882	1873	1,597,383
1869	1,466,758	1874	1,480,892
1870	1,393,279	1875	1,159,979

Our chief customers for worsted stuffs and wool are China, Hong Kong, Australia, the United States, and Holland; for worsted stuffs, mixed with other materials, the United States, France, Germany, Italy, and Holland; for carpets, America and Australia; for shawls, the United States; for rugs and wrappers, Brazil and Germany.

Before quitting the subject of the woollen trade, I must allude to two subsidiary classes of workers: (1) the shoddy workers; (2) warehouse employés. Shoddy, as stated before, is a mixture of any old textile materials, which can be added to the wool, and has given rise to a large and an important trade within the last few years. The contiguous towns of Dewsbury and Batley, in Yorkshire, are the head-quarters of shoddy, where are to be found mills, occupied in nothing else than grinding up and "devilling" the dubious refuse of all kinds and countries, so as to make it fit for admixture with the decency of unadulterated wool. Old clothes, out of which the last item of wear has been extracted, are sent to the shoddy mill for a final metempsychosis, the principal agent in the change being the "devil," which tears up everything into

fine fibres, and makes it tolerably fit for carding. It may be easily imagined what a quantity of dust is produced in this operation, and apparently of a rather offensive description, which is not to be wondered at, when we consider the abominations that have to be operated upon. In fact, such a typical catarrh and irritation of the mucous membrane is often brought on, that it is known as the "shoddy fever." The other class of workers are those in the warehouses of Bradford, who are occupied in "making-up" the goods, as they come from the dyers, and packing them for exportation. This class is principally composed of men and boys, the latter being employed in "rolling" by machinery (generally worked by steam power), measuring and folding, the latter process being also performed by a machine called the "cuttler." Much occupation is also given in wrapping, ticketing, and marking the goods. Where women are employed, it is in sewing cotton cases over the piece goods, an employment known as "tilloting." This, however, is only necessary, when the goods are for the American market. In such a vast trade, a very large number of people find work in these departments, and they may be called, generally speaking, the aristocrats of the textile operatives, being, most of them, in receipt of better pay, and occupying a higher stratum in society. As a rule, the work is not heavy, although, some few years ago (1866), sufficient outcry was made, as to the amount of overtime, to warrant an inquiry being made by the Children's Employment Commissioners. But it was proved that overtime was not ordinarily a point of any

importance to the makers-up, for that while the profit of the manufacturer lay in the cost of wages and general production, that of the merchant was on the goods themselves, and not on the labour expended on them.

CHAPTER IV.

SILK.

ALTHOUGH, in point of numbers, the silk trade does not in any way approach that of cotton or woollens, it is one of our very important textiles, employing an army of young people. The figures given by the Census table of 1871 are:

	Males.	Females.	Total.
England	25,080	51,100	75,180
Scotland	1,276	1,270	2,546
Ireland	465	320	785
Total	26,821	52,690	78,511

The ages of the English silk workers were:

	5–	10–	15–	20–	25–	35–	45–	55–	65–	75
Males ..	198	3361	2400	1458	3426	3861	3787	3221	1852	516
Females ..	262	7344	9567	6845	9939	7010	5138	3101	1434	460

Amongst the females, a large majority of young children is shown.

The Factory Returns of 1871 do not give by any means such a large number of employés, which will

probably arise from the fact, that a very considerable population is in some parts of the country occupied in what may be called, domestic silk work; at all events, it is not massed together in factory life.

	No. of Factories.	No. of Carding Machines.	No. of Combing Machines.	No. of Spinning Spindles.	No. of Power Looms.
England ..	694	698	8,219	929,155	12,135
Scotland ..	4	..	18	11,086	243

employing:

	Children under 11.	Up to 13.	Males up to 18.	Above 18.	Females.	Total.
England ..	1,283	5,635	2,048	8,916	28,828	47,311
Scotland ..	..	..	14	136	653	813

According to Mr. Redgrave's calculations,* there were in the silk trade:

	1850.	1861.	1871.	1875.
No. of factories	227	777	696	818
„ spinning spindles	1,225,560	1,338,544	940,143	1,114,703
„ power looms ..	3,670	10,709	12,358	10,002
„ „ weavers	..	7,279	6,334	6,080

showing a great diminution of spinning spindles in proportion to each factory, but a great increase in the

* Factory Reports, 1875.

number of power looms to the weavers occupied upon them. The relative numbers of the workers were:

	1850.	1861.	1871.	1875.
Children from 8 to 13 ..	7,151	7,014	6,928	6,871
Males up to 18	3,214	3,224	2,662	2,381
„ above 18	7,068	10,162	9,053	8,466
Females above 13 ..	25,111	32,029	29,481	27,841

by which it would appear, that the numbers employed in the silk trade have been rather declining within the last fifteen years.

The localities of the silk trade are very varied. Macclesfield and Congleton, and, in a less degree, Nottingham, Derby, and, to a slight extent, Malmesbury, and Haverhill in Cambridgeshire, may be considered as the chief centres; while in the Lancashire country districts, such as Middleton and Leigh, there is a good deal of hand-loom weaving for broad silk fabrics. There are also some large silk mills in Manchester. At Macclesfield, besides the factories for silk throwing, there are workshops where gimp making, winding quills, and weaving are carried on. Leek, in Staffordshire, is chiefly occupied with sewing-silk. Spitalfields, in London, once the chief head-quarters of the silk weaving, was for a long time at a very low ebb in this respect, but has much improved of late years. The manufacture of silk trimmings is carried on there and in Bethnal Green to a very considerable extent. Silk embroidery is rather an important trade in Manchester.

Mr. Cobb, in his interesting article on Silk,* has explained fully how the silk is obtained from the cocoons, and brought over to this country in rough hanks, or "books," mostly coming from China, Japan, and India, the skeins of which these books are composed varying from 60 to 90 inches in length. When in the mills, the first operation is the sorting by girls, who classify the different kinds, and separate them from the waste or rough silk adhering to the skeins, the utilization of which constitutes a separate trade. The sorted skeins are then wound on to bobbins by women, called "danters," assisted by little piecers, who have enough to do with the constantly breaking threads. In the cleaning, the threads are wound on to another bobbin, passing through two perfectly smooth parallel plates, so beautifully set, that the least knot or inequality of thread is detected, and prevented passing. The cleaning frames are usually superintended by young lads. The threads are next doubled, and a twist given by the spinning or "throwing" machine, the frames being usually set rather close together, and each piecer minding about two sides of forty spindles each. The yarn is then wound into a "hank," according as it is intended for weft or warp, the technical names of which in the trade are respectively "tram" and "organzine," more briefly called "organ." "Tram" is defined by Mr. Cobb as the union of two or more single threads without twist, doubled in one operation, and afterwards slightly twisted together; and "organ" as the union of two

* 'British Manufacturing Industries.'

or more single threads separately twisted in one direction, and then doubled as in tram, and re-twisted in the opposite direction. Having arrived at this stage, the yarn is sent to be boiled and dyed. Up to this point, the yarn is called "hard," viz. retaining its natural gum; and the object of the boiling is to get rid of this, previous to dyeing, in which latter operation, it has become the fashion of late years to add some deleterious substance, so as to increase the weight and apparent value. In fact, silk dresses are not what they were. "The black dresses of our grandmothers," says Mr. Cobb, "were often, after years of wear, handed down to their children and grandchildren. Now that the weighted silks are employed, great complaints are made by the ladies that their dresses are worn out so rapidly; but on the other hand, one effect of the weighting is to make the thread of silk cover twice the space it formerly did, and by these means produce a corresponding reduction in the cost of a given length." The chief point in the manufacture, so far, is the almost exclusive employment of women and children, whose fingers are more facile and deft than those of men. The dyed yarn is then treated like any other fibrous material, and passed through the drawing frame into the weaving department, where the women usually superintend two looms, which run at the average rate of 110 "picks" per minute. In weavings of a complicated pattern, the looms are of the most intricate description, as told us by Mr. Cobb, in his account of the Stevens loom, for making a scarf $2\frac{1}{2}$ yards long and $6\frac{1}{4}$ inches wide. "This scarf required the use of 16,000

perforated cards to make the figure, and 14,000 for the plain part, making a total of 30,000 cards. The number of threads in the warps of each scarf was 1800, and there were fifteen different colours in the shoots: these figures are multiplied by the number of pieces being made at once, so that with ten pieces making, 18,000 threads of warp would be in the loom. It requires six months to fit up such a loom, and when it and all the cards are ready, it occupies a month to obtain one complete pattern. The cost of the loom, with design and cards complete, is about 500*l.*"

The spinning of the waste silk, a trade of comparatively recent origin, is not so pleasant an one as that of the silk itself, as in dressing the mass of long intertwisted fibres, a great deal of dust is given off. After the dressing, it is passed through the drawing machine, and then spun, the temperature being kept tolerably low, as the fibres become electric if too high a heat be used. The dressing stage is said to cause bronchial and lung affections, but otherwise the silk manufacture is a fairly healthy one. The Registrar-General's table for 1871 of deaths of males was:

Total.	5–	10–	15–	20–	25–	35–	45–	55–	65–	75
411	..	..	15	10	35	40	49	91	92	78

and it is evident from the table at p. 27, that it is superior to both the cotton and woollen trades in sanitary matters. The condition of the young who work in the Lancashire country districts is open to some

doubt, as a great deal of the weaving is carried on in the workmen's houses: "and in such places the evils of a domestic industry are enhanced by those attendant on the system of middlemen." In the early factory days, the children employed in silk mills were in some respects worse off than even the cotton or woollen spinners, for each little worker was made responsible for any mistake or waste caused, whereas, in the other factories, the responsibility lay with the spinner. The hours, too, were excessively long, and the arrangements of the mills very bad. One witness before the Factory Commission of 1833 stated, that silk-mill children were a pale and ghastly set, and declared that few of them had any sweetness or childish ring in their voices, but that they spoke with a hoarse and guttural sound.

As a matter of fact, in the present day, affecting the young in silk throwing, the occupation is not only lighter than in other textiles, but the speed of the machinery has been absolutely lessened of late years, instead of being increased, arising from the bad or inferior reeling of the material in China, and there is consequently less stress upon the hands.

The manufacture of silk thread is principally carried on at Leek, a pretty North Staffordshire semi-factory town of some 15,000 inhabitants. The females are almost entirely occupied in winding, and the boys in helping the twisters, a good proportion of both these employments being performed at home, by a wheel or "gate," to which the threads to be twisted are attached by means of hooks at the circumference; and the work of the boy is to run to and fro from one end of the

"shade" or shed, carrying the bobbins on which the thread is wound, up to the wheel at the other end.

The old Huguenot silk trade of East London has revived somewhat of late years, though it is principally carried on in the production of rich furniture silks, both on the factory and domestic systems. Velvets, too, are woven in Spitalfields and Bethnal Green. Hand-weaving velvet is but slow work, a man seldom being able to weave more than a yard a day, as he has to stop at the end of every shoot to cut the threads. The silk weavers of London have ever been a skilful, industrious, and steady race, noted for their promptness in their work, and their honesty, fabrics of a very valuable nature being often entrusted to their care by the employers.

The making of silk trimmings, tassels, &c., gives occupation to a great number of young people, principally girls, in the same neighbourhood. The boys work at turning wheels for machines, or twisting chenille; the girls, at the machines, threading beads, arranging tassels, braid, or buttons. The "covering" machine is a very ingenious contrivance, by means of which the threads from a number of revolving reels, set upright on a flat surface, are made to converge to a central point, and wrap little wooden moulds or buttons which are continuously supplied by one hand of the operator, while the other turns the wheel. When the workrooms are airy, light, and well ventilated, the conditions of labour are favourable; but there is a good deal of "garret" work, where the surroundings are eminently unsanitary. Bending the

wire on which the beads are strung, is said to make the fingers of the young operatives sore, as is the case also in artificial flower making (p. 155).

The present average earnings of silk workers are, in the raw silk throwing, for the Macclesfield district:

Process.	Paid by Day Wage or Piecework.	Ages.	Sex.	Range of Wages.	Average Wages.
				s. *s.*	*s.* *d.*
1. Splitters ..	Both	Adult	Women	11 to 13	12 0
2. Winders ..	Principally wage.	13 and upwards.	Both	6 „ 10	8 6
3. Cleaners ..	„	„	„	6 „ 10	8 6
4. Re-cleaners	„	Adult	Female	9 „ 11	10 0
5. Doublers ..	„	„	„	9 „ 11	10 0
6. Knotters and Drummers	Wage	„	„	10 „ 11	10 6
7. Spinners ..	„	13 to 16	Boys	9	9 0
8. Mill-men ..	„	Adult	Males	18	18 0
9. Stewards ..	„	„	„	20 „ 22	21 0
10. Staff-men ..	Both	„	„	20 „ 30	24 0

The Macclesfield district varies a little from that of Derby and Nottingham in its range of wages, while the manipulation of the silk is also different in its various processes. At Macclesfield, the winding is a process by itself, and is the starting point for all learners, under the supervision of skilled women, who do all the wasteing. The silk is then cleaned and recleaned as a separate process, the latter being done by the most experienced and intelligent part of the operatives, on account of sizeing and the elimination of inferior quality, thus obtaining the best results for cleanness and evenness, and enabling the after pro-

cesses to be better performed, with a minimum of waste. In the Nottingham and Derby districts (with few exceptions), as also in the South-eastern counties, the winding and cleaning are done at one process, and the silk is then drawn from one bobbin to another by learners, who are the youngest of the employés, at wages from 3*s.* to 5*s.*, preparatory to spinning or doubling. Then, again, in the Cheshire district, the silk is put in skeins as it is thrown, so as to produce a greater uniformity of twist, whereas at Nottingham and Derby it is reeled in hanks, as a separate process, from the throwing bobbins. In some of the latter mills, women are employed in the spinning and throwing, in consequence of repeated demands for higher wages from the mill men and their union.

Comparative cost of production (on labour only) per lb. Tsatlu silk, ordinary and fair quality, in the two districts:

	Macclesfield, &c.		Derby, &c.	
	s. *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*
Washing and parting ..	0 2		0 2	
Winding	0 10 and	1 0	1 5 and	1 8
Cleaning	0 8 „	0 10		
Re-cleaning and drawing	0 4 „	0 6	0 2 „	0 3
Doubling	0 1 „	0 1½	0 2 „	0 3
Spinning	0 1½ „	0 2	0 5 „	0 7
Throwing	0 2½ „	0 3½	0 3 „	0 6
Reeling, knotting, and Drumming	0 1½ „	0 2	0 2	
Making up	0 1		0 1	
Total	2 7½ and	3 2	2 10 and	3 8

As compared with 1871, the average would be:

	1871.				1876.			
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
Men, throwing and spinning	16	0 to	17	0	19	0 to	20	0
Boys, spinning	10	0			12	0		
„ re-drawing or cleaning			..		8	6		
Doublers and danters ..	7	6 „	10	6	11	3		
Winders (women)	9	0 „	11	0	10	9		
„ (girls)			..		9	6		
Drawers (children)	2	6 „	4	0				
Reelers	8	0 „	9	0	11	9		
Overlookers	20	0 „	28	0	23	0		

The earnings in the silk waste trade, based on full time of 10 hours, are:

	1871.				1876.			
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
Silk boilers	18	0			20	0		
„ dressers	26	0			30	0		
„ preparers (girls) ..	9	0			10	0		
„ spinners „ ..	9	0			11	0		
„ doublers „ ..	9	0			10	6		
„ reelers „ ..	9	0 to	10	0	12	0		
Engineers	18	0			26	0		
Warpers	24	0			10	6		
Children (half-timers) ..	2	6			2	6 to	3	0

The commercial statistics of the silk trade are as follows:

IMPORTS.

Quantities.

Year.	Silk Knubs, or Hanks and Waste.	Raw Silk.	Thrown Silk.
	cwts.	lbs.	lbs.
1866	25,417	5,453,804	66,850
1867	23,031	5,849,648	196,188
1868	30,050	7,036,177	326,574
1869	29,198	5,573,366	259,509
1870	31,360	6,307,575	283,723
1871	38,984	8,253,335	177,386
1872	33,866	7,302,083	63,001
1873	31,815	6,445,213	108,794
1874	35,141	5,911,831	114,601
1875	33,787	4,487,837	110,010

Value.

	£	£	£
1866	443,736	7,243,199	138,333
1867	375,733	7,556,462	439,967
1868	493,984	8,741,045	881,522
1869	519,033	6,812,831	614,603
1870	491,605	8,204,993	599,651
1871	624,945	8,921,589	232,752
1872	608,912	7,825,180	94,502
1873	460,128	6,758,138	195,025
1874	466,283	4,966,325	148,851
1875	415,085	3,443,722	102,734

the silk knubs coming principally from China, France, and Bengal; raw silk, from China, France, Bengal, Japan, and Italy; thrown silk, from Belgium, and

France. The value of the importations of silk manufactures was:

Year.	Broad Stuffs.	Ribbons.	Other Kinds.
	£	£	£
1866	6,226,954	2,206,405	879,259
1867	5,443,113	2,610,987	930,374
1868	6,508,472	3,101,336	1,185,644
1869	7,609,479	3,166,594	1,018,687
1870	10,357,666	3,721,855	1,018,806
1871	4,137,907	1,898,588	2,159,230
1872	4,916,084	1,853,915	2,371,864
1873	5,444,289	2,321,914	2,009,286
1874	7,336,356	2,516,223	1,889,487
1875	8,155,120	2,143,786	1,719,426

The chief supplies of broadstuffs (silk and satin) are from France and Belgium; velvets from Belgium; ribbons and silk plush from France.

EXPORTS OF BROAD PIECE GOODS.

Year.	Quantity.	Value.
	yards.	£
1866	3,067,065	608,688
1867	2,376,638	486,388
1868	2,926,171	569,055
1869	2,900,455	565,502
1870	3,854,028	740,212
1871	5,160,337	856,401
1872	4,417,240	696,373
1873	2,983,712	528,266
1874	4,025,459	675,927
1875	3.654,660	562,936

chiefly to France, Brazil, and Australia.

The following statement, made by Mr. Brocklehurst,

M.P.,* is of considerable importance to the silk trade: "We have to compete with Italy, where they employ their hands 70 hours per week against our 56½, and pay one half the wages that we now pay; i.e. where they pay for the 70 hours 9*d.* per day, we are paying 1*s.* 6*d.* and 1*s.* 9*d.*, and where their short timers would be at work, they pay 4½*d.* where we pay 6*d.* In Italy, they have now the throwing of the Asiatic silk, which has not been the case heretofore, and for this purpose silk is being imported to Marseilles instead of to London, and will be thrown in Italy for the French, instead of in England." As with the cotton, flax, and woollens, so it is with the silk, that foreign competition is pressing England hard.

* Factory and Workshops Acts Commission, 1875.

CHAPTER V.

LACE AND HOSIERY.

THE lace trade differs in many important details from those of other textiles, and in itself combines so many different occupations, that it may be divided generally into three heads, viz.:

1. Lace making on the machine.
2. Lace finishing.
3. Pillow-lace making.

These three classes, although all resulting in the same material, are in reality distinct trades. 1. Lace making is essentially a factory trade, and is carried on almost entirely at Nottingham and the surrounding district. The owners of factories, where the lace is produced by the machines, are termed, in Nottingham *parlance*, lace makers.

After it is made, it is turned over to (2) the finishers, who are styled "manufacturers," and who carry on their work in "warehouses." This latter building, therefore, is not a storehouse for goods, but a place where the finishing processes are performed. Sometimes even these processes, such as the lace dressing, are done in separate and distinct establishments.

3. Hand or pillow lace making is an entirely different trade, carried on under different circumstances by a special class of operatives, the chief localities being country villages and towns, such as those of Bedfordshire, Buckinghamshire, and Devonshire; while in Ireland, Limerick and Donaghadee are the principal centres of occupation.

The Census tables give the number of lace workers as follows:

	Males.	Females.	Total.
England	8,569	40,801	49,370
Ireland	37	750	787

but as regards the latter country, a good many of the embroiderers, who are placed at 4915, might properly be placed with lace workers. Of the females, who constitute by very far the largest proportion of lace workers, Bedfordshire absorbed 6051, Bucks 8077, Oxfordshire 1007, Devonshire 4342, while the remainder were found in Nottinghamshire.

The ages of the female workers show a great proportion of juvenile labour:

5–	10–	15–	20–	25–	35–	45–	55–	65–	75
626	5240	6027	4931	7314	5595	4700	3574	2106	688

The Factory Returns of 1874 give the total number

of lace factories in England at 311 (in 1871, 223, wit 2948 lace machines), employing

	Male.	Female.
Children under 13 ..	512	393
Males up to 18	1314	..
„ above 18	5119	..
Females above 13 ..	..	3035

The late Mr. Felkin, in his article upon Lace * (writing in 1873), says "that in 1843 there were 3200 twist net, and 800 warp frames, returning 2,740,000*l.* for that year; in 1851, 3200 bobbin net and 400 warp, giving a return of 3,846,000*l.*; and in 1866, 3552 bobbin and 400 warp, returning 5,130,000*l.* The returns of 1872 were certainly 6,000,000*l.* at least, and, from advancing wages, must still rapidly increase. Men are now earning from 4*l.* to 6*l.* for 56 hours' weekly labour."

At the present time it is almost impossible to obtain statistics as to the number of machines employed, for the trade is one of so many ramifications. It may roughly be divided into three sections: (*a*) the levers, or fancy branch; (*b*) the curtain; and (*c*) the plain net; and in all of these the work is done by the piece, or, to use a technical term, by the "rack." When trade is good, large wages are earned by the twist-hand or lace makers, whilst, when times are bad, as at the present, wages may even rule as low as 10*s.* a week. Some four or five years ago, men engaged on

* 'British Manufacturing Industries.'

the "levers" made on an average of twelve months, 4*l.* per week. In addition to the lace makers, the divisions of labour include engineers, warpers, winders, menders, drawers, designers, draughtsmen; and in the finishing department, dressers, bleachers, dyers, &c.

The lace making itself is carried on altogether by men, who work the machines, women being only employed in reeling cotton for them, and boys, in filling the bobbins with thread, &c. The machines are constantly in operation between 4 A.M. and 12 P.M., not, of course, worked by one man, but by relays of two, who divide the labour between them, as also the pay, which is usually by the piece. Where the crowded Nottingham working life is best seen, is in the warehouses, "finishing" the lace, and here we find the processes to be "dressing," mending, clipping, scolloping, "grafting," or piecing on borders, some of these being done by machinery, others by hand. The dressing rooms are of great length, varying from 200 to 400 feet.

When the lace is returned from the bleach or the dye works, it is sent in here to be dressed, i. e. stiffened with some starchy mixture, and then stretched out on long frames, and dried gently at a very high temperature. Sometimes the lace is dipped into the "dress," in which case the superfluous matter is pressed out by rollers; at other times the lace is fastened or "straightened" on a frame by hooks, and the dress is put on at the edges, and spread over the surface with brushes. The girls who do this are called "wetters"—and as the lace dries, it shrinks or

stretches, according as it is silk or cotton, and necessitates the adjustment of the frame to suit the case, a light work which young children can undertake. The time occupied in the drying depends very much upon the kind of material, the size of the piece, the condition of the atmosphere, &c.; some only requiring a few minutes, others one hour and a half. In a "piece" of lace, there are perhaps fifty strips or breadths made together, and connected by lacing threads, and if some of the threads composing the pattern are not required for the other portion, they are carried on loose until they are required; the removal of these loose threads is called, clipping and trimming. From the peculiarity of the drying, in the dressing process, and the impossibility of leaving it until it is finished, a special permission is given by the Act of 1870 to vary the meal times; indeed, the time and habits of the workers in the warehouses are very different to those of ordinary factory hands. They never begin in the morning till eight o'clock, having had their breakfast before coming; they then work till one, when there is an interval of a quarter of an hour for lunch. With the exception of lace dressing, the finishing is really more like millinery, and would be very easy employment, were it not for the heated rooms and the bad ventilation. In the case of the dressing rooms, the temperature is high, from 80° to 90°, and the air generally stagnant; but they are not so bad as they were at the time of the Children's Employment Commission in 1862, when they were notorious for the ill health that they caused. Mr. White stated in his Report, that "the people employed in these rooms have almost invariably a

pale and bloodless face and skin; and many of them in constant perspiration, or in the language of one girl, 'sweat awful'; become languid and emaciated, fainting being very usual; suffer much from exposure to cold air when not at work, and especially on leaving, consumption from this cause being said to be common amongst them." All these unfavourable conditions were aggravated in rooms where "gauffring" by means of gas stoves was carried on, for the purpose of bonnet front making. These facts were corroborated by the evidence of a Nottingham surgeon, who stated that the proportion of consumptive patients visited by him was

In 1852	1 in 45	In 1859	1 in 9
„ 1854	1 „ 17	„ 1860	1 „ 8
„ 1858	1 „ 15	„ 1861	1 „ 8

Lace mending and trimming have a special tendency to affect the eyes, for which many women and girls are obliged to wear glasses, some complaining of the difficulty of seeing the work when black, and others, of the white dazzling them. This arises from over-exertion of the eyes, and the constant strain upon the muscle, by which the eye accommodates itself to the distance of the object. Working by gaslight and in impure air are of course powerful agents in increasing this defect. Partly from the enervated and unnatural conditions of life to which the workers were subjected, and partly from the very late hours which prevailed, previous to the Legislature taking in hand the warehouses, the lace workers of Nottingham did not at one time enjoy the best of characters for morality; but the improvements in these matters and the spread of education

have done very much to rescue the town from this stigma, and except for a tendency to early and improvident marriages, Nottingham is on a par with other factory towns. The present wages of lace workers (1876) are as follows:

RATES OF WAGES.

	£	s.	d.	£	s.	d.
Levers or Fancy Lace:						
Lace makers, range from	1	10	0 to	5	0	0
Winders, set wages about	0	11	0 per week.			
Menders „	0	11	0 „			
Threaders, range from	0	6	0 to	0	10	0
Warpers „	1	10	0 „	2	0	0
Designers and Draughtsmen, set wages from	3	0	0 „	8	0	0
Curtain:						
Makers, range from	1	10	0 „	4	0	0
For cotton, average about	1	5	0 „	2	0	0
„ silk „	1	10	0 „	2	5	0
Winders (silk), from	0	10	0 „	0	15	0
„ (cotton), from	0	8	0 „	0	12	0
Menders „	0	8	0 „	0	16	0
Threaders (cotton), from	0	6	0 „	0	10	0
„ (silk) „	0	12	0 „	0	16	0
Warpers „	1	10	0 „	2	0	0
Designers „	3	0	0 „	7	0	0
Draughtsmen „	2	0	0 „	5	0	0
Plain Net:						
Makers (cotton) „	1	0	0 „	2	0	0
„ (silk) „	1	10	0 „	2	5	0

Winders, wrappers, &c., little less than the curtain.

No designers or draughtsmen employed.

Engineers:

Generally from 25*s.* to 35*s.* or 40*s.* per week.

Bleachers:

Men, for 60 hours per week, from 50*s.* to 60*s.* Average about 33*s.*

Boys from 16 to 18 years of age, 12*s.* to 15*s.* per week.

Girls „ 12 to 16 „ 6*s.* 6*d.* to 10*s.* „

Dressers:

Same as above, except that in some cases men are paid from 2*s.* 9*d.* to 3*s.* 3*d.* per 100 lb. weight of lace.

Women from 2*d.* to 3*d.* per hour, 55 hours per week.

In 1875 we imported lace of the following values: Pillow lace from Belgium, 136,055*l.*; machine lace, principally from France, 268,088*l.*; and we exported of cotton lace and patent net, a total of 1,133,093*l.*, and of silk lace 137,516*l.*, the chief portion of which was to America, Germany, and France. Machinery during the last ten or fifteen years has materially increased, and particularly in the curtain branch, which was formerly in the hands of four or five large manufacturers. At the present time machines are actually exported to France, and compete sharply with the Nottingham trade.

The numbers engaged in pillow lace making, as in the counties of Devon, Bucks, Beds, and Oxford; and of guipure work, as at Limerick, are of sufficient importance to justify a brief description, although the trade is but a domestic one, and only to a limited extent comes under the Factory and Workshops Acts. Honiton lace, so dear to ladies, is usually made in separate pieces or "sprigs," which are afterwards joined together, either on the pillow by other lace work, or with the needle. In the home counties, the lace is made in the workers' cottages, and by them disposed of to a few small shopkeepers in the villages, who act as middlemen to merchants or manufacturers in the larger towns. These latter send round agents, or travel themselves round the district, collecting

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and buying up the lace from the middlemen. The system, like all such, whatever may be the trade, is a bad one; for the workers are utterly in the hands of the shopkeepers, usually a grasping race, who not only pay the lowest possible price, but frequently insist on the value being taken out in inferior and expensive goods. The lace makers are thus not only defrauded, but habits of dependence and improvidence are laid in early youth, which are not easily shaken off afterwards. A curious feature in pillow lace making localities, and particularly in those of Devonshire, is that of lace schools, where a lace mistress collects a lot of workers, commencing with very young children. The Devonshire district may be described roughly as bounded on the east and west by the Axe and the Exe, on the north by the Bristol and Exeter Railway, and on the south by the sea. It contains between 60 and 70 lace schools, with about 226 female workers above thirteen, and 344 under thirteen.* Previous to the most recent legislation on the subject of employment of the young, six years old was a common age at which this education began, and it will be scarcely believed that (as told us by Mr. White in his Report †), four or five, and in some cases even earlier, was stated to have been the age at which the baby first underwent training. The children are sent to school to be taught this (as in the straw plait districts) at a small charge of a few pence per week; and after they become proficient, they either make for themselves, or are paid by the mistress so much for their lace. Those,

* Factory and Workshops Act Commission, 1875.

† Children's Employment Commission, 1st Report, 1862.

however, who are not apprenticed, pay 1*s.* per week for the first three months, and 6*d.* for the second three, the mothers having the children's work. The evils of the occupation are, the ill-ventilated rooms in which these little ones are crowded together, and the long periods of work through which they are expected to sit quiet and learn their business, though it must be stated that, in both these matters, things are now greatly improved. The older ones seldom work separately, but are fond of congregating together for the sake of warmth, company, and after dark, for light, which is generally increased as much as possible by placing the candle behind a bottle full of water. As a consequence of their continuous employment, the operatives are usually pale and weak, and the eyes are very commonly affected.

The following account of pillow lace making, as given by Mr. Whymper to the Factory and Workshops Acts Commission, is so interesting that I reproduce it here: The worker holds the pillow on her lap, having fastened upon it a paper, or parchment, with the pattern traced and pricked in pin holes. Close by her she has a number of pairs of lace sticks, each some four inches long, and connected with its fellow by a thread, which, at either end, is partly wound round the top of the stick. Sticking successive pins upright in the holes, and hanging the threads round each one as soon as it is set up, she begins to intertwist and cross the threads by passing the little sticks over and under each other, as they hang down loose on the surface of the cushion. When all the holes have been filled with pins, and all the threads intertwisted, the

result is the "sprig"; and to connect the parts of the latter, a stitch is taken up through one of the pin holes with what is called a "needle pin." Through the loop thus made one of the lace sticks is passed, and the thread on it is knotted with one of its fellows. When the sprigs are all ready, they are made up by fixing them collectively on the pillow, and connecting them by means of threads and lace sticks. There is another kind of lace produced in the Devonshire district, called Tunis lace, which is not so difficult, and is made up with machine-made edging or braid. Lace makers are usually good reckoners, from the habit of counting their pins, which they do to see how much work they can do in an hour, or who can work the fastest. They reckon by the number of pins in a head of lace, i.e. in a length forming a complete pattern; after which the pattern is repeated in a fresh head. A quick girl of thirteen, in some patterns, can stick up six hundred pins in an hour, but they are set a little under what they can do at the full stretch, or they would get behind in case of any accidental stoppage.

The rapidity with which pillow lace makers do their work is bewildering to the uninitiated, and Mr. Whymper tells an amusing story of a beggar who attracted the passers by from her quick and skilful manipulation with the lace sticks, but who, in reality, was in complete ignorance of how to use them. The lace making at Limerick and the lace embroidering at Donaghadee present very much the same conditions as the work in England.

Hosiery.

The hosiery workers of England amounted, according to the Census tables, to males, 22,367; females, 19,671; total, 40,038, and of the following ages:

	5–	10–	15–	20–	25–	35–	45–	55–	65–	75
Males ..	55	1269	2430	1933	3595	3921	3922	2725	1724	793
Females ..	140	1886	3500	2690	3505	2769	2189	1447	4095	450

by which it will be seen that, in both males and females, but particularly the latter, a large portion of the *corps d'armée* consists of children.

Like the lace trade, that of hosiery is very much localized, indeed, even more so than lace; for though a large country district finds employment in hosiery, it is a compact one, and is found entirely in the counties of Nottingham, Leicester, and Derby. The towns, such as Nottingham, Leicester, Hinckley, Loughborough, &c., contain, for the most part, the factory power and factory workers, while the domestic industry is scattered throughout the villages. Each year, however, sees the latter declining, and the trade aggregated more and more into the factories, and were it not for certain reasons which I shall presently state, this would have been the case to a still greater extent. The localization of the trade may be said to be subdivided in the various districts; for instance, the country round Nottingham is more or less occupied with the cotton, merino, cashmere, and silk branches of the trade, while Leicester busies itself

more with woollen hosiery, Hinckley with coarse cotton, and some of the villages, such as Bulwell and Arnold, were formerly almost exclusively employed in glove making. Now, however, the use of kid has nearly superseded knitted gloves, and Evesham, Worcester, and Yeovil have the best part of this article of dress to themselves.

Hosiery embraces a vast number of items, such as socks, underclothing, drawers, jackets, and comforters, and it is said that upwards of 5000 different articles come under the head of fancy goods. As in Nottingham, the material is woven on the frame by men, while boys wind the bobbins. The warehouse is the resort of the majority of the young, and especially the females, who are employed in mending, sewing, sorting, stamping, folding, trimming, turning hose, and various other work of this kind, while a vast amount of labour is carried on at home, both at the frame by the men, and in "seaming," stitching, and hemming by the women and girls. Probably the most peculiar feature of the trade, as opposed to other trades, is the sub-letting of the frames for a weekly rent. The middlemen, until of late years, had it all their own way in the hosiery districts, and were a considerable power in the state. Not only did, and still do, many small hosiery masters let out frames to the men, but they also let out standing room in their houses, so that the operative had to pay rent both for room and machine. Then, again, many of the factory owners, also, were proprietors of these country frames; and, lastly, the middlemen, or "bagmen," finding it a profitable trade to become a frame owner,

stepped in and often made large sums out of the rent, combined with the purchase of the work from the tenant. "There are two chief reasons which tend to keep up the hand-frame work; one is, the difficulty of doing certain things by machinery, or doing them equally well; the other, the great cost of new factory frames, which may be from 70*l.* to 120*l.*, the hand frames costing from 10*l.* to 20*l.*, coupled with the fact that the manufacturers, having property in the existing hand frames, do not like to throw them aside as useless, and to incur the cost of providing the larger and more expensive factory frames. But as the old hand frames wear out, they are never replaced, and are not likely to be." * This statement, which was made in 1862, has been considerably verified of late years, and the hand-frame trade has, to a great extent, succumbed to its powerful rival, machinery, although there is still a large population engaged in it. The greatest blow that was ever dealt to this system was the Hosiery Manufacture and Wages Act (37 & 38 Vic. cap. 48), which forbids employers in that trade to let out knitting frames and machinery to their workpeople, deducting the rent from the price of the work. All work since that date has to be paid for *net* without any deductions, except for bad workmanship. At the period when the Children's Employment Commission was held, the occupation of very young children in "seaming," or joining the separate parts of the articles, such as the finger of a glove or the foot of a stocking, was carried to an enormous and very inhuman extent, the little ones commencing their

* Children's Employment Commission, 1st Report.

labours at 3½, 4, and 5 years, while one was stated to have begun work at 2 years of age! The hours, too, were terribly long, especially at the close of the week, after the "shacking," or the keeping of St. Monday, had involved the household in idleness for the first two or three days. It was a common thing for the workers, including young children of 10 and 11, to sit up till midnight, and even all night in times of pressure. Besides the young boys who wind, the older ones learn to work at the frames, as soon as they are high enough to stand up to them.

There is one more branch of the hosiery trade to which I must allude, viz. the elastic web manufacture, in which indiarubber is combined with textile fabrics, as in braces, bands, sides for boots, &c., and which has considerably increased of late years. The Factory Returns of 1874 give 90 factories as engaged in this trade, with 43,287 spindles and 2662 power looms, employing 45 children under 13 years, 661 males up to 18, 2453 above 18, and 2165 females: total 5324. Leicester was the head-quarters of this trade, but within the last few years, Coventry has gained a reputation for making a better web, and the manufacture has rather migrated to that town. It appears to be more of a factory trade in reality than that of hosiery.

The average earnings of hosiery operatives are not easy to define, owing to the peculiarities of the trade. They may be divided into (1) The wrought branch articles, or "one at once," begun and finished on the same machine. At this work, which is domestic, men earn (1876) 18*s.* to 20*s.* weekly; women and adults

from 8*s.* to 14*s.* There is no control or supervision over the workers, so that this is no criterion as to what they could earn under factory conditions. (2) Work made on the "three-frame branch," or divisional system, such as stockings, when one person makes the upper part on one frame, another the ankle and heel on a second, while a third produces the foot. The operatives, mostly men and boys, earn from 20*s.* to 30*s.* (3) The factory branch, where, from improved machinery and a greater demand for the articles, men earn 30*s.* to 50*s.*; women, 12*s.*; youths, 8*s.* to 16*s.*; girls, 6*s.* to 12*s.* These statistics apply, however, rather to the Nottingham than the Leicester districts.

I have now briefly to notice some statistics of the hosiery trade. The exports of stockings and socks for 1875 were:

	Dozen Pairs.	Value.
		£
United States	296,428	113,106
„ Pacific	10,763	4,899
Chili	27,205	4,760
Brazil	48,455	14,576
Argentine	61,865	11,786
South Africa	39,758	13,568
Bombay	23,263	7,545
Bengal	27,167	7,029
Australia	453,135	156,775
North America	19,085	6,055
West Indies	23,820	7,072
Other countries	85,044	31,050
Total	1,124,988	378,221

in addition to hosiery of other kinds to the value of 618,290*l.*

CHAPTER VI.

MINOR TEXTILES.

We have now examined into the bulk of the factory operatives, and there only remain a few minor and subsidiary trades, which, though comparatively unknown, are yet of considerable importance in themselves.

I. Fustian Cutting.

Probably many of my readers have but a vague notion that such a trade exists, and still less that a population of from 7000 to 8000 gain their livelihood by it. In the Census tables we find the entry of "fustian manufacture," the workpeople in greater part of which are probably engaged in fustian cutting. "Although the word *fustian* is properly used to designate one particular fabric, in the term *fustian cutting*, it is generally taken to include all other products of the loom, whether of silk or cotton, such as velveteens, velvets, and 'cords,' the pile of which is raised by cutting the weft threads of the woven cloth."

The numbers, according to the Census, were these:

	Total.	5–	10–	15–	20–	25–	35–	45–	55–	65–	75
Males	3193	6	130	439	445	827	608	443	222	84	10
Females	4179	3	556	1121	765	900	420	279	84	40	11

The Factory Returns give as follows:

	No of Factories.	Children up to 13.	Males up to 18.	Above 18.	Females.	Total.
England	305	79	489	1256	2904	4728
Ireland	18	2	30	369	..	401

the discrepancy between the two tables arising from the fact of fustian cutting employing a good deal of domestic labour. The trade is very much localized, being limited in England to Manchester, Warrington, Lymm in Cheshire, and the adjoining villages. It is a shifting kind of business, which may easily be taken up or thrown aside, as often happens, by unemployed mill hands. The routine of the trade is curiously seen in Mr. Lord's Report on this branch.* "The cloth, after it is taken from the loom, and before it is sent to the cutter, undergoes a preliminary process called 'stiffening,' the object being to strengthen the back of the material by means of flour paste, or some such application, so as to afford resistance to the pressure of the cutting knife. This is rarely, if ever, done at the place where the cloth is made, but generally at a separate establishment; and the 'cutting,' moreover, is invariably conducted by persons having no connection with the manufacture.' Though a cutter will frequently speak of the person who supplies him with his work as the manufacturer, he is, in fact, the merchant, agent, or warehouseman, who gives the order to the manufacturer in the first instance, receives from him

* Children's Employment Commission, 1st Report, 1862.

the cloth when woven, parts with it again to be stiffened by the 'percher' and stiffener, and a second time to be cut by the cutter, receiving it back from him, and sending it to another independent person, the dyer or finisher, for cleaning and the subsequent processes which are needed, according as the order is for stock or for sale." It will thus be seen through how many processes and stages a piece of cloth has to travel, even after it has left the factory. Fustian cutting is one of the few branches of textile work that is mostly done by hand. The *modus operandi* is as follows: the cloth is first brushed over with lime-wash, to free it from grease and make the threads crisp, and it is then placed on a roller frame and carded by a small hand-card. A great deal of dust is given off at this stage, which is an unhealthy one, owing to the close proximity of the cloth and the dust to the operator. The cutting knife is an exceedingly thin, sharp, flexible blade, guarded by a metal sheath or guide, which projects beyond the point. This knife the cutter holds in his right hand, and pushes it rapidly along the warp to the farthest roller, severing the weft threads as he does so. The motion required for this operation is a most peculiar one, the body being thrown forward with an inclination to the right, and the left shoulder being brought up and round. With a grown-up person this does not cause any mischief, but with a young growing child, as until within the last few years was always the case, the practice of cutting soon caused a distortive twisting of the right knee, together with a high left shoulder. This tendency, as well as the bronchial affections induced by the dust, and the frequent smell of the lime-washed

cloth, makes fustian cutting anything but a pleasant occupation. At the time that the Children's Employment Commission was held, fustian cutters were, perhaps, as low in the social scale as any class of operatives, and they were as bad in the country districts, such as Lymm, as in the crowded towns. Excessively long hours, irregularity of habits, improvidence, drunkenness and immorality in both sexes, were too commonly the rule and not the exception; added to which, the wages were always low and very fluctuating. By the Factory Act of 1864, a special clause was made for the benefit of the children of fustian cutters, who were prohibited being employed under 11 years of age. As in the hosiery hand-frame districts, play for the first half of the week was succeeded by undue pressure towards the end, a system producing the worst consequences both to young and old. The work is always by the piece, and the earnings in 1862 were:

	From		
Velvets	6*s.* to	8*s.*	the piece.
⅝ Velveteens	8*s.* „	10*s.*	„
¾ „	11*s.* „	15*s.*	„

and in 1871:

Men	10*s.* to	20*s.*	per week.
Women	6*s.* „	12*s.*	„
Children	4*s.* „	8*s.*	„

II. Straw Plait.

Like the pillow lace, straw plait making is essentially a domestic employment, differing from the former, however, in this respect, that after its formation, it passes into a quasi-factory life, where the manufactured plait takes a coherent shape, and is

made up into articles of dress in the shape of bonnets and hats, &c. The plait trade is much more localized than that of lace; for, though it is carried on to a small extent in London, the chief districts are the home counties of Bedford, Herts, Bucks, and Essex, having for their industrial centres the towns of Luton, Dunstable, Hitchin, and St. Albans. The total number engaged in the trade in 1871 was—

	Total.	5–	10–	15–	20–	25–	35–	45–	55–	65–	75
Males	3,593	462	549	381	381	702	527	357	156	63	15
Females	45,270	1,589	5,227	6,787	6,685	8,960	6,406	4,736	2,841	1,597	442

but it is evident that in this large estimate are included those who make up the plait, in point of fact, the bonnet and hat makers, who constitute a large proportion of the towns just mentioned. Of these numbers, Hertfordshire contains 12,089; Buckinghamshire, 3412; Essex, 2839; and Bedfordshire, 20,701. Straw plait is essentially a female occupation, and also one in which a large number of the very young are employed; and we find the occupation carried on in the villages of those counties, the makers of the plait feeding the towns, which, in their turn, from the increase in the plait-sewing and making-up operatives, have pushed the plait making farther and farther into the country. Ten or twelve years ago, the work was taught in plait schools, of which every little hamlet could boast a fair number; and their general character was well described by Mr. White,* who says that in one cottage he found a plait school of forty girls and the mistress, with only an

* Children's Employment Commission, 2nd Report, 1864.

allowance of about twenty-four cubic feet of air for each. The scholars were of ages from between three to seven, while an infant under two was fingering straws in imitation of its neighbours. The small workers had their scissors tied to their waists, while the mistress maintained discipline by a stick a yard long, which, in some schools, was pretty often in use. The general evils of this system were principally those of overcrowding, an utter lack of ventilation, and a long-continued monotonous employment, which told heavily on the physique and spirits of the poor little wretches. The specific evils were not of so much importance, and consisted in the plaiters getting their fingers cut, or their mouths excoriated from drawing the straws between them. The straws themselves have to undergo a kind of bleaching by sulphur, and this, with ill-fed, ill-conditioned little children, had a tendency to produce rather obstinate sores. Still, as a rule, there does not appear to have been much absolute ill-treatment or inhumanity, but rather that slow mischief, arising from the densest ignorance of all things, moral or physical. The usual charge for education in straw plaiting was 1*d.* or 2*d.* a week; and after the child became a proficient, it either worked for the mistress or on its own account, the mistress selling the plait for the child and deducting a percentage for accommodation. Of course, of education of the mind there was none; and even as lately as 1874, Mr. Redgrave speaks of the utter ignorance of the district and the paucity of schools. At the present time the effect of supervision has been to close the greater part, if not all, of these plait schools, and the

children now mostly work at home. In 1872 there were twenty-four plait schools in Essex, which in 1874 were reduced to five, so that we may fairly speak of them as things of the past.

Simple as the operation of plaiting appears, there are a good many varieties of it, and several processes to be gone through, such as sorting, or picking out the discoloured straws, to be made up into inferior plait; cutting off the dead ends from the straws that have been plucked too near the root; splitting, in which the straw is split up into half-a-dozen or more strips by means of a tube, armed with steel slitters; milling, or passing the straws under weights, to take out their stiffness; wetting; clipping off the ends that stick out after plaiting; "bunching," or carrying the plait from elbow to wrist and cutting it off at the tenth link; and, finally, steaming the links, or bleaching with sulphur. The goods are then ready to be taken to the "plait market," which is held in the open air in one of the neighbouring towns and forms a peculiar and picturesque scene. The plait is sold by the score, i. e. two pieces, each 10 yards long, but the price differs according to the character of the work, whether the plait is Devon (or double), i. e. plaited with fourteen straws, or single, with seven, or whether the plait is whole, with unsplit straws, or of twisted edge, &c.

Although straw hats and bonnets properly come under articles of dress, it will be better, under the circumstances of the manufacture being conducted on a factory system, to touch upon it here. In Luton the population of which has doubled within the last

forty years, being 9000 in 1841 and 18,295 in 1871) and Dunstable, nearly the whole of the female population obtain their living directly or indirectly from this occupation; and the foreign trade with Australia, India, Cuba, and South America, is becoming of great importance. The work is carried on in three different ways: 1, by the families in the neighbouring villages, who make up for themselves and sell direct to the warehouses; 2, by "little" makers-up, who employ generally a small number of women, and also sell to the warehouses; and 3, the factories proper, where from three to four hundred females will probably be employed. The latter system is more prevalent at Dunstable than Luton, not much home work being done at the former town. The factory operatives have by far the best of it, the wages being higher and the sanitary conditions being very superior to those of the little masters. In the latter case the owner generally stiffens and irons the hats with one or two assistants; while the women sew the plait, lining, trimming, &c. One of the peculiar features of the trade is the immigration which takes place into Luton and Dunstable, during the busy season, of workwomen from London, who crowd the towns in no ordinary degree. The higher class of straw bonnet work is carried on in London, where latterly, I may mention, a paper imitation of straw plait has been, largely made and sold. The earnings vary very much, according to the time of year and the abundance or slackness of work. Straw plaiters begin at 2*s.* a week, when they are ten years old, and gradually increase, till they make up to 5*s.* or 6*s.* a week, at the rate of production of 40 yards a day of twelve

hours. Adult hat and bonnet sewers earn from 10*s.* to 25*s.*, with an average of about 15*s.* a week during the season, which lasts for six months in the year. The number, however, of the women who plait is decreasing, because of the large amount of plait introduced from China at a lower rate, so that all the better class of working people become bonnet sewers. It may interest some of my readers to know, that in 1875, 362,561 dozen of straw hats were exported, of the value of 323,363*l.*; of which 125,279 dozen went to France, 96,854 dozen to Australia, 39,001 dozen to British North America, and 20,497 dozen to the United States. On the other hand, we imported straw hats and bonnets from France and China to the value of 112,394*l.*

III. Hair.

The manufacture of hair seating and hair weaving employs a sufficient number of operatives to justify a slight description here. The Factory Returns of 1871 give the following summary of hair factories:

	No. of Factories.	No. of Carding Machines.	No. of Males up to 18.	Above 18.	Females.	Total.
Lancaster	2	..	..	21	34	55
Middlesex	7	22	61	178	25	264
Norfolk ..	3	1	8	22	3	33
Salop ..	1	..	4	5	42	51
Somerset	1	..	15	36	..	51
Surrey ..	9	15	27	215	580	822
Worcester	1	2	24	23	171	218
York ..	7	3	11	48	277	337
Total ..	31	43	150	540	1132	1833

But, in addition to these, there is a population of more than double this number in Suffolk and on the borders of Cambridgeshire, employed in hair-seating making. The villages in the Stour valley, such as Glemsford, Halstead, Melford, and others, are entirely dependent upon this trade, which, in this district, is a domestic one. The weavers are principally women, who formerly employed children largely in "serving," viz. putting the hair on to the reed, by which it was drawn across the warp. Now, however, there is an appliance by which the weaver serves herself, the reed being fixed to an arm having a rotary motion from the loom, and worked by the feet, so that children's labour is, to a great extent, dispensed with. In the northern factories, such as at Sheffield, the first process is to prepare the hair, after it is brought in fresh from the animal; and the curled hair, used for stuffing mattresses, is produced by spinning hair into a rope, which is then twisted. In 1874 the hair factories had decreased to 27.

In 1875 the imports of hair were as follows:

	Quantity.	Value.
	cwts.	£
Cow, ox, bull, or elk	58,151	181,814
Horse	20,231	171,053
Other kinds	..	254,098

the supplies of the first-named coming principally from France and Germany, and of the horse hair from Germany, Uruguay, and the Argentine Republic. The manufactures of hair for the same year amounted in value to 17,269*l.*

CHAPTER VII.

BLEACHING, DYEING, AND PRINTING.

THESE final stages of textile industry, after the goods emerge from the factory, are of great importance, both as regards the articles themselves, the processes involved, and the numbers of workpeople employed in them. The Census tables give the following account of them:

	Dye Colour Maker.		Dyer,* Scourer, Calenderer.		Bleacher.		Printer.	
	M.	F.	M.	F.	M.	F.	M.	F.
England	2,551	277	17,947	1,484	3,645	..	8,804	1,056
Scotland	205	..	4,168	1,440	409	1,361	4,629	3,164
Ireland	44	8	400	63	1,501	..	84	25
Total	2,800	285	22,515	2,987	5,555	1,361	13,517	4,245

* Including silk, woollen, and cotton dyers.

making a total of:

Dye makers	3,085
Dyers, &c.	25,502
Bleachers	5,916
Printers	17,762
Total	52,265

The Factory Returns of 1871 show a total of 66,037 engaged in these branches, viz.:

BLEACH AND DYE WORKS.

	No. of Factories.	Children up to 13.	Males up to 18.	Above 18.	Females above 13.	Total.
England ..	269	452	2,337	13,420	2,349	18,378
Scotland ..	99	78	779	3,831	4,048	8,736
Ireland ..	71	20	362	2,963	968	4,313
Total ..	439	550	3,478	20,034	7,365	31,427

CALENDERING AND FINISHING WORKS.

England ..	71	14	301	1,760	266	2,341
Scotland ..	36	..	172	922	455	1,549
Ireland ..	43	..	45	352	15	412
Total ..	150	14	518	3,034	736	4,302

PRINT WORKS: CALICO AND OTHERS.

England ..	118	2,349	3,182	11,710	1,616	18,827
Scotland ..	28	897	1,786	4,685	3,381	10,749
Ireland ..	3	111	91	452	78	732
Total ..	149	3,357	5,059	16,847	5,075	30,308

The bleaching and dyeing claim our first attention. The process of bleaching varies according to the nature of the material, cotton, linen, or woollens undergoing different treatment in detail, though the object is the same in all, viz. to deprive the fabric of colouring

matter and give it a snowy whiteness. Cotton, which is usually bleached after being woven, though sometimes it is bleached as yarn, is the most important of all, and gives employment to the largest number of operatives. The different stages, as so well described by Mr. Sims in his article on Bleaching,* consist of singeing or burning off the loose fibres or nap; washing (and sometimes steeping in malt and water); "bowking," or boiling the goods with lime in large vessels, called "kiers;" "souring," or passing them through weak muriatic acid and water; boiling again with soda ash; passing through bleaching powder, the chlorine of which imparts such a beautiful whiteness; and, finally, souring once more in weak sulphuric acid.

As a rule, the conditions of labour in bleach works are not so severe as they are in the textile factories, although, taking the individual occupations, there are some which are quite as trying, as, for instance, in the drying rooms, the stoves, and the singeing and stitching departments. The women who work in the latter are, in some works, exposed to considerable heat, while the cloth is being singed over red-hot plates, during which operation disagreeable fumes are given off. The stitching, which is carried on in this room, is for the purpose of fastening together a number of pieces of cotton cloth, so as to enable them to be drawn rapidly and continuously over the plate. The stitching is otherwise called "whipping the ends," and there are two kinds, grey and white, the women who stitch the grey earning the best pay. The other

* 'British Manufacturing Industries.'

principal employments of women are "hooking" and "making up," although men sometimes do the latter. The office of the "hooker" is to hook the cloth into the lengths required, a work which entails the hardest manual labour of any of the operations in the female department. The hooks are placed about a yard apart, and the cloth has to be fastened to them by a slight hold on the selvage. The woman who does this "is continually in motion all day. She is stooping every minute, and hooks probably 250 pieces of 40 yards a day; and what with the passing backwards and forwards, hooking the plaits, and having to pull the plaits, and so keep bending incessantly, and then carrying her pieces, of from 9 lbs. up to 20 lbs., to a table some distance off, and then fetching her pieces from the pulling frame, she is incessantly at work."* There are usually three hookers to one maker-up, and the payment is by the 100 pieces; at all events, in the Lancashire district. The over-sizing, which, as we have seen (p. 22), is carried to such an extent in the weaving of cotton, is a great nuisance to the workers in the hooking and making-up departments, on account of the fine dust which is continually disengaged and floats about the room. In the bowking process, the pieces of cloth are drawn straight from the washing machine in a continuous length through earthenware loops, called "pot-eyes," and then pass over a winch, until they fall into the "kier," which is a steam-tight cylindrical vessel of cast iron, heated by steam at low pressure. The kier holds about 3500 lbs. of cloth,

* Factory and Workshop Acts Commission, 1875.

which, as it descends, is laid in regular plaits by boys, to be soaked with the water and milk of lime. The boys have to stand upon the brink of the kier, and have to be rather careful that they do not fall in also; added to which, they get their clothes wet in filling the kier, and taking the cloths out again for the fresh washing. Of late years the kier is frequently heated by high-pressure steam, which has proved to be rather dangerous to the workmen; while it is also complained that the boys have to enter into the kier through a manhole, so as to plait the cloth again for another boiling, a very hot and oppressive task.

The bleaching, properly so called, is perhaps the nicest and pleasantest part of the whole process. Where open-air bleaching is practised, as is the case in the linen in the North of Ireland, the operation takes a long time, extending to a couple of months; but in cotton, bleaching is now entirely done by chemical means and under cover. The bleaching croft, as it is called, is a healthy and rather refreshing place, from the presence of the chloride of lime. The final processes of drying and clamping are carried on at a considerable temperature, so much so that the operatives, who are almost always men and boys, dispense with as much clothing as they conveniently can. The drying room is also liable to be full of steam. As a rule, the women do not work in the drying rooms, although it appears that they do so in Ireland; and when this is the case, it is doubtless an unhealthy occupation. From a table compiled by the medical officer of an Irish bleach

work, rheumatism seems to be the preponderating ailment, there being, out of a total number of 481 patients in the years 1872–3–4, sixty-six suffering from this disease.

Workers in bleach works, and particularly women, are generally brought up, more or less, in that employment; and it is observed that factory hands seldom leave the mill to work at bleaching. In point of status, the operatives are usually respectable, clean, and tidy, and hold about the same position as weavers in the mills. A curious custom prevails in some parts of Scotland of having barracks for the women to reside in, the reason being that many of the bleach works are at a considerable distance from a town, and there is, therefore, a scarcity of accommodation. In Renfrewshire and similar districts the bleaching classes are recruited by importations of Irish girls, who have no friends, and would not otherwise know where to go for lodgings; so that the system is, if properly managed, one of great benefit to the operatives. Like other factory hands, the condition of those in bleaching establishments has been wonderfully improved of late years. In the Report of the Commission on Bleaching and Dyeing Works, 1851, it was stated that at one particular work, the women remained for four days and nights with their clothes on, and only rested on the tables and benches for an hour or two; indeed, a stretch of seventeen or eighteen hours' work at a time was not uncommon.

The following is a table of the average weekly earnings of bleachers; but it must be remembered that

they vary very much, according to the district and the material:

	1871.		1876.	
	s. *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*
Foremen	35 0		38 0 to 40	0
Men	16 0 to 21	0	18 0 „ 25	0
Stitchers and singeers ..	9 0 „ 9	6	14 0 „ 16	0
Boys in stoves	9 0 „ 13	0	10 0 „ 14	0
Makers-up	18 0 „ 21	0		
Girls and boys	7 0 „ 9	0		

Although most dyers are bleachers, the converse does not follow; and in all cases, the dye works and the bleach works are distinct; but with *printing* dyeing is so intimately associated, that the two trades may almost be looked upon as identical. Block and cylinder printing are the two methods in vogue at the present day; in block printing, the colouring matter or mordant being supplied by means of wooden blocks, worked by hand; and in cylinder printing, by engraved copper rollers, from which the mordants are transferred immediately to the cloth by pressure and rotation. The Factory Returns give the following summary of both kinds of work:

	No. of Factories.	No. of Cylinder Machines.	No. of Cylinders.	No. of Hand-block Tables.
England	118	794	22,492	2,948
Scotland	28	241	827	1,184
Ireland	3	10	6	172

by which it will be seen that the great majority of the work is done by cylinders; and this is not to be wondered at, when we notice the accuracy and speed by which one or more colours can be put on to the cloth.

The fixation of the mordants is one of the principal operations of the dyeing process, these being usually applied before the colouring matter. During this stage, the goods are "aged," viz. passed through a warm, moist chamber, saturated by steam jets, and the superfluous mordant is afterwards washed out in solutions of phosphate of soda, a process still known as "dunging." The art of dyeing requires a very considerable knowledge of chemistry, for the colours which the dyer now uses are of infinite variety, and differ much from each other in their application, and the length of time which they require. For stock dyes, madder and indigo are those which are most in use. The Turkey-red dyeing trade, which is principally confined to Scotland, comprehends more than twenty distinct processes, each occupying an entire day, and extending over a period of twenty-six working days for cloth and twenty-two days for yarn. The dyeing of cloth can be carried on without exposing it to the external air; but that of yarn requires open-air work. Neither printing or dyeing appear to be deleterious to health, and certainly there are no processes in either, which are so laborious as some of those which I have just described in bleaching.

As regards legislation, the earliest Act under which this class of operatives was placed, was the Print Works Regulation Act of 1845 (8 & 9 Vic. c. 29), when printers were included under the same supervision as that of the spinning and weaving mills. By the Bleaching Act of 1860 (23 & 24 Vic. c. 78), the bleachers and dyers were also included, except those who worked at bleaching in the open air. The hour of finishing

work at night was fixed at 8 P.M., and 4.30 P.M. on Saturdays. In 1862, however (26 & 27 Vic. c. 8), the open-air bleaching was put under the same category; and by the Bleaching and Dye Works Extension Act of the succeeding year, the "calenderers" and finishers were also given the benefits of inspection; an advantage extended in 1864 to those who were engaged in "hooking," "lapping," or making up, and packing yarn and cloth. By the Factory and Workshops Act of 1870 (33 & 34 Vic. c. 62), the Factory Extension Act of 1867 was made to apply to all these branches of occupation.

The following were the average wages earned in 1871:

	s.	d.		s.	d.
Colour Mixing—					
Foremen	40	0	to	60	0
Men*	18	0			
Boys*	10	0	„	14	0
Ageing and Steaming—					
Foremen*	25	0	„	30	0
Men*	16	0			
Girls and boys*	8	0	„	18	0
Machine Printing—					
Foremen	55	0			
Printers	20	0	„	25	0
Tenters*	16	0			
Boys*	5	0	„	8	0
Hand Printing—					
Foremen	27	0			
Printers	20	0	„	25	0
Half-timers	3	0			
Dyeing and Cleaning—					
Foremen	35	0	„	60	0
Dyers*	17	0			
Women*	10	6	„	12	6
Boys*	6	0	„	10	0
Finishing—					
Calenderers*	16	0	„	17	0
Makers-up and packers*	18	0	„	21	0

Since 1871 a considerable rise has taken place in these earnings, and more especially in the divisions of labour marked thus,* the increase being from 20*s.* to 25*s.* skilled hands, while foremen get higher or lower wages according to capability. Circumstances vary so much, however, that it is very difficult to give any fixed rate. The work is mostly by the piece.

The statistics of the imports of dye stuffs embrace several materials:

Year.	Cochineal, Granilla, and Dust.	Cutch and Gambier.	Garancine.	Indigo.
	cwts.	tons.	cwts.	cwts.
1866	32,751	15,279	49,150	74,256
1867	47,054	15,348	66,468	71,995
1868	35,575	23,780	79,612	75,874
1869	41,276	18,840	30,510	86,721
1870	47,790	24,996	42,195	79,255
1871	55,429	30,546	27,738	106,307
1872	39,132	26,777	43,313	87,320
1873	42,263	29,512	43,101	87,233
1874	39,393	21,032	53,006	85,707
1875	40,941	28,845	25,865	59,608

Year.	Madder.	Madder Root.	Shumach.	Valonia.
	cwts.	cwts.	tons.	tons.
1866	121,563	223,519	13,688	29,396
1867	121,146	138,715	13,440	19,547
1868	128,242	178,481	13,251	29,673
1869	38,139	105,626	13,234	23,652
1870	37,820	135,498	14,431	25,781
1871	93,624	154,801	16,481	27,099
1872	134,207	109,352	14,614	32,481
1873	92,493	76,416	13,782	28,977
1874	65,355	148,002	16,514	26,336
1875	38,241	63,981	14,686	24,434

Of the value of:

Year.	Cochineal, Granilla, and Dust.	Cutch and Gambier.	Garancine.	Indigo.
	£	£	£	£
1866	594,818	386,309	320,812	2,207,597
1867	809,914	348,494	434,711	2,422,534
1868	588,691	463,463	517,480	2,854,213
1869	579,547	360,399	202,372	3,194,613
1870	581,956	468,388	275,177	2,721,208
1871	719,624	511,095	220,465	2,937,224
1872	509,605	576,195	285,926	2,482,347
1873	535,691	684,188	316,873	2,433,712
1874	478,761	523,760	389,380	2,153,732
1875	492,976	741,255	220,323	1,618,853

Year.	Madder.	Madder Root.	Shumach.	Valonia.
	£	£	£	£
1866	282,363	..	..	533,577
1867	282,401	..	..	331,264
1868	300,630	551,289	233,555	471,887
1869	89,536	321,732	201,615	357,455
1870	92,683	339,333	228,431	395,546
1871	254,532	389,138	206,617	448,458
1872	372,563	271,931	220,333	558,207
1873	221,859	156,940	208,381	524,490
1874	148,830	258,912	261,747	550,232
1875	90,307	102,760	246,343	622,019

The cochineal and granilla come principally from the Canary Islands and Mexico; cutch from India; Gambier from the Strait Settlements; indigo from Bengal, Madras, and Mexico; madder from France and Holland, and the root from Turkey, Italy, and Holland; shumach from Italy; and valonia from Turkey and Greece.

CHAPTER VIII.

CLOTHING AND DRESS.

HAVING glanced, as fully as my space would admit, at those great bodies of operatives engaged in the textile manufactures, I will proceed to describe those, who find their occupation in making up these textiles into the clothing which society needs.

The reader will find on page 3 a summary compiled from the Census Tables of 1871 of this enormous class, and on page 6 one from the Factory Returns of the same date, comprising those who follow this occupation and, at the same time, are associated in factory life. The number of those who work on the factory system, however, in the manufacture of dress, bears no proportion to those engaged in domestic industry. The Census, for instance, gives the total of workers in dress, viz. hair and wig makers, hatters, furriers, tailors, milliners, staymakers, hosiers, glovers, boot and shoe makers, patten, button, umbrella, and shirt makers, for England, Scotland, and Ireland, at 1,123,122; while the Factory Returns places the factory workers in the same trades at only 62,326. I shall deal as briefly as possible with the various divisions of labour which go to make up this great industrial army.

I. Milliners and Dressmakers.

I need scarcely say that this trade is one that is almost entirely carried on by female industry, although there were, in 1871, as many as 1141 man-milliners, who, it is presumed, would be those occupied in superintending the wholesale shops and warehouses. But of milliners and dressmakers (female) there were:

	Under 20.	Above 20.	Total.
England	64,869	234,799	299,668
Scotland	6,977	26,077	32,994
Ireland	9,598	21,237	30,835
Total	81,444	282,053	363,497

We will take the ages of the English workers, as a sample of the whole:

5–	10–	15–	20–	25–	35–	45–	55–	65–	75
41	5,441	59,387	62,251	76,077	48,307	28,812	13,521	4,634	1,197

by which it will be seen that all ages find employment at this work, while the vast majority lies in the ranks of young womanhood. Millinery and dressmaking, although usually considered by the outside world to be synonymous, are by no means the same thing; but although they, together with mantle making, are sometimes carried on by the same employer, they are all distinct trades, although, of course,

possessing similar conditions of labour, and all united by that common bond of union in trades of dress, viz. the sewing machine. Millinery takes a wider and a better-paid range than dressmaking, and comprises the thousand and one ornamentations of a lady's toilette, in the shape of cap-fronts, borders, trimmings, &c. The millinery establishments in all large towns usually have two classes of workers, the resident and the day workers, the former preponderating in metropolitan West-end establishments, and the latter in the wholesale houses. These are subject to the fluctuations of the trade, being liable to dismissal when work is slack, which in London is usually the case during December, January, and for about a month, or sometimes two, in the summer. In large millinery establishments there is also found another class of worker, called an "improver," who enters for a period of training, and pays instead of being paid.

There is probably no body of workers which has undergone such amelioration as this, on all points, wages, sanitary improvement, and limitation of working hours—the two latter resulting mainly from the passing of the Factories and Workshops Amendment Act of 1871 (34 & 35 Vic. c. 104), by which young persons of fourteen years of age and upwards, and women, may be employed for a period not exceeding fourteen hours in any one day, provided that it shall not be for more than ninety-six days in any period of twelve months, or for more than five consecutive days in one week. But this modification is only permissive, and practically the

Inspectors limit it still further at discretion, Mr. Redgrave only allowing twenty-four days in the year. Millinery and dressmaking are emphatically season trades, and—especially in our large towns—the time of year and character of our climate are the chief agents in influencing the "season;" but the unwritten laws of Fashion have also enormous influence; and Fashion, as set in motion by that stern slave-driver, Society, has been the cause of terrible abuses, which, though recognized as such by public opinion, were too deeply rooted to be put down by it. Overcrowded rooms were, ten years ago, the rule and not the exception, having an average of cubic feet of air varying from 80 to 160 feet. It is mentioned in Mr. White's Report on Milliners,* that a large City wholesale firm had in their three work-rooms an area of accommodation for four hundred work-women; but when as many as one hundred and thirty were placed in one room, fainting fits were common. They then limited the number to one hundred, thus raising the proportion of air per head from 203 to 264 feet, the result being that the faintings ceased. The burning of a large quantity of gas added to the mischief, by taking away so much oxygen and supplying in its place so much foul air; so that prolonged labour in an atmosphere of this kind from 6 A.M. till midnight, and, during the length of the London season, sometimes till four next morning, was often sufficient to break down the health of a worker in one single season. Mr. Radcliffe, in his Report on this subject to the

* Children's Employment Commissioners' Second Report, 1864.

Privy Council, 1863, enumerates a formidable catalogue of physical evils to which milliners and dressmakers were subject, such as nervous head-aches, tic-doloreux, imperfect respiration and digestion, irregular uterine functions, defective constitution, consumption, swelled legs and blistered feet, this last being specially noticeable amongst the trimmers of ball dresses, who have to stand at their work. "None of the persons examined had been engaged less than eighteen months in the millinery business, and the effects described were found in every grade of development. They had gradually grown from the occupation, and the susceptibility to them seemed to remain, the longer the employed had been engaged in it." The same kind of statements, varying only in intensity, were made by Drs. Ord, Ballard, Letheby, and other sanitary authorities. It is very satisfactory to find that the opinion of Mr. Redgrave is, that, since the Legislature took the matter in hand, an immense improvement has taken place throughout the whole country in all millinery and dress work, and particularly in the matter of over-time and better ventilation. Neither must we omit to mention the almost universal adoption of the sewing machine, which appears to have had an undeniably good influence on the physique of the worker. In some cases, evidence has been brought forward, that mischief was occasioned by the strain caused on the eyes, and on the legs, in working the treadles; but although doubtless there are many individual machinists who have suffered from

it, and particularly where the class of work is heavy, as in tailoring, the great mass of those who use it, would not again change the machine for hand-work.

It is impossible to state anything with accuracy respecting the wages of milliners or dressmakers, for they vary on so many points, such as the town in which the workers reside, the class of work on which they are engaged, and many other circumstances. In 1871 the Factory Returns gave the following list of weekly earnings for the metropolis:

Manager	3*l.* 16*s.* 8*d.**
Dressmakers	11*s.* 6*d.* to 30*s.* 8*d.**
Dressmakers	from 10*s.* to 27*s.*†
Milliners	9*s.* 2*d.* to 25*s.**

* With board and lodging. † Without lodging, tea only.

Mantle work:

Machinists	15*s.* to 18*s.*
Hand-workers	12*s.* to 20*s.*
Day-workers	12*s.* to 15*s.*

At the present time, it may be stated generally, that wages have increased 25 or 30 per cent. Managers in large London houses obtain good salaries, reaching as high as 200*l.* per annum; while day-workers vary, according to merit, from 10*s.* to 27*s.* per week. Mantle-making machinists in good houses will earn 20*s.*, and in suburban wholesale houses from 12*s.* to 16*s.* As a rule, earnings in the provinces are not so good as in London.

II. Tailors.

Tailors and tailoresses together constitute a very large body of operatives. The statistics of the Census are as follows:

	Tailors.	Tailoresses.	Total.
England	111,843	38,021	149,864
Scotland	18,322	1,084	19,406
Ireland	18,769	1,502	20,271
Total	148,934	40,607	189,541

and the average ages of the workers (English):

	5–	10–	15–	20–	25–
Males	9	2,704	11,981	11,612	22,498
Females ..	7	1,085	6,395	6,279	8,712
	35–	**45–**	**55–**	**65–**	**75**
Males	21,161	20,314	13,730	5,884	1,950
Females ..	6,741	4,776	2,587	1,127	312

by which the occupation seems to be pretty equally spread over each period of life. As a rule, the tailor's occupation is not on the factory system, but in a vast number of cases, and especially in the country, he is rather a solitary individual than otherwise, perhaps assisted by one or two others, either working for themselves, or taking work home from the master. In

the towns, however, the trade is more aggregated, and comes under the Workshops Act supervision. The Factory Returns give the factory tailors at:

	No. of Factories.	No. of Sewing Machines.	Children under 13.	Males up to 18.	Above 18.	Females.	Total.
England	44	2415	31	118	1537	4967	6653
Scotland	14	759	6	12	215	1363	1596
Ireland	3	137	..	3	114	885	1002
Total	61	3311	37	133	1866	7215	9251

As to the places of work in which men and women tailors pass their days, I fear that not very much can be said in their favour, while another great evil is that of the "sweating" system, in which the prices for the work done are ground down to the very lowest. As regards the diseases incident to the occupation, the men suffer much from respiratory complaints, partly from the ill-ventilated, stuffy workshops, and partly from the attitude in which all tailors work. Both men and women, too, are liable to affections of the eye, principally of a nervous character, and these are found to be much increased when the sight is concentrated for long together on black cloth. The mortality of tailors in 1871 is given by the Registrar-General thus:

Total.	5–	10–	15–	20–	25–	35–	45–	55–	65–	75
2504	..	5	68	121	288	339	460	455	416	352

"Tailors die at rates much above the average. For their health, and for shoemakers, much remains to be done."

Tailoring for women in our large towns is usually a very badly paid employment, although it is better than shirtmaking, as it demands a certain amount of knowledge and skill, and deals with heavier materials. It is a fact that in London, by some of the contractors for army clothing, the rates paid are only 4½*d.* for trousers, and for canvas trousers 5*d.*, although the average pay is higher than this. A very bright contrast, however, is afforded to this miserable state of things, by the Army Clothing Depôt in Pimlico, the largest factory establishment of the kind in the kingdom, where Colonel Hudson, the superintendent, has shown how much can be done towards ameliorating the condition of the operatives. The utmost order and discipline prevail amongst the workers, who carry on their occupation in a noble, light, and well ventilated hall, all appearing happy, healthy, and contented. They may well be so, for they are earning good wages, under a system which ensures them permanent employment, while, on the other hand, the public service is very much the gainer by it. At this establishment one thousand women are daily at work, turning out every article of attire that is worn in the army, except shirts; and as one of the first qualifications for admission is good character and an aptitude for needlework, an examination is held of each candidate by a committee, consisting of the matron, the foreman cutter, the foreman viewer, and the instructor, who are responsible

for the selection of proper persons. On admission, they are placed in a trial division in the factory for further probation and promotion. There are one hundred and twenty sewing machines at work, specially adapted for heavy tailoring, and as steam is the motive power, a great deal of strain is taken off from the machinist. The hall is arranged with military order, there being fifty-eight tables, with a passage in the centre and down each side. Nine women work at each table, eight of whom baste and sew, the ninth being the machinist, who is able to get through all the work which the other eight can prepare. As the machinist is of considerable importance in the proper regulation of the work, she is dressed in a red garibaldi, so as to make her easily noticed and recognized, if away from her table. The mechanical arrangements in the ironing department are very perfect, the irons or "geese" being slung on arms, moving on universal joints, while the board on which the garment is laid, is lifted up to meet the iron, by a lever pressed by the foot. Everything here is done on piece-work, and the calculations are so minute and so admirably arranged, that any worker can see at a glance what she has made in the week; while by the same system, the cost of the smallest material is debited to the proper garment in which it is used. The rate of pay for making an ordinary tunic for a private in the line is 3*s.* 2*d.*; for a pair of trousers, 1*s.* 2*d.*; for a frock, 1*s.* 10*d.*; towels, 4*d.* per dozen; lining of caps, 2½*d.*; strap, 1*d.*, &c.; and a tolerably clever work-woman can make one tunic, or nearly four pairs of trousers, in a day. A garment

is given out to be made (the factory finding thread) to each worker, and is entered against her name; and for every pair of trousers so given out, the machinist at that table gets 2*d.* from the worker; for a tunic, 4*d.*; for a frock, 3*d.*; and thus each of the eight has to contribute to the machinist. Supposing, therefore, that each hand made four pairs of trousers per day, this amounts to 4*s.* 8*d.*, less 2*d.* per pair (or 8*d.* total), to the machinist. The worker's earnings will, therefore, be 4*s.*, while the machinist would earn 5*s.* 4*d.* In practice, however, her earnings would not be above 4*s.* 6*d.* per day. In making up uniforms of a more costly character, such as that of a drum-major or a trumpeter, the wages earned are considerably higher, and 30*s.* or even 40*s.* are occasionally made. The factory, however, is not limited to women's work only, for about two hundred men are employed, all of whom present the same marked contrast to their less fortunate brethren, who are engaged on starvation wages from day to day in crowded, unhealthy rooms. The whole system of the Army Clothing Depôt reflects the utmost credit on its management.

It is only fair to state, that while miserable wages are the rule in our crowded towns for the home seamstress, there are, at the East End of London, wholesale clothiers' and contractors' establishments, where the work is done on the premises, and where a reasonably good week's earnings may be realized.

III. Boots and Shoes.

The manufacture of these very necessary articles of clothing has undergone of late years remarkable changes; and few of my readers, probably, are aware of the extensive introduction of machinery that has taken place. The obvious result has been the conversion of shoemaking from a domestic to a factory trade, a condition which is apparently on the increase. The numbers engaged in this occupation, in 1871, were:

	Males.	Females.	Total.
England	197,465	25,000	222,465
Scotland	24,161	1,221	25,382
Ireland	32,113	1,495	33,608
Total	253,739	27,716	281,455

Add to these, 1194, who are employed in providing pattens for wet weather, and clogs for the factory operatives, and we have a total of 282,649 engaged in *chaussures* of some kind. Although mainly the occupation of a man, women have of late years largely found employment, owing to the universal use of the sewing machine, which can be applied to stiff leathers just as well as to the most delicate muslin. The ages of the workers were:

	5–	10–	15–	20–	25–
Males	67	6,525	19,515	20,856	41,919
Females ..	36	2,143	6,260	4,617	4,850

	35–	45–	55–	65–	75
Males	36,932	31,968	23,081	12,494	4,108
Females ..	3,084	2,443	1,409	793	265

which shows that, while there is a large leavening of young workers, there are probably more old men amongst shoemakers than in any other class of operatives. The Factory Returns give the following list:

	No. of Factories.	No. of Sewing Machines.	Children up to 15.	Males up to 18.	Above 18.	Females.	Total.
England	139	3,230	116	2,239	7,964	6,322	16,641
Scotland	6	284	1	251	829	514	1,595
Ireland	2	33	..	21	83	78	182
Total	147	3,547	117	2,511	8,876	6,914	18,418

There is a considerable difference between London and the provinces in the labour conditions of this trade, the latter adopting more of the factory system, in towns like Leicester, Stafford, Ipswich, and Northampton, all great boot and shoemaking localities, while London has only partially fallen into it; and there is therefore much garret work, and, what is worse, a large amount of miserably paid contract work, especially as regards the female operatives, the price that is sometimes paid to machinists being not more than half-a-crown per dozen for women's boots, or at the rate of 2½*d.* a pair. Formerly, all the "closing" was done by men, especially when the "uppers" were for men's boots; but the sewing machine now does the greater part of this. Children, too, prior to the

introduction of the machines, were more numerous in the trade, and were employed in "stabbing," an unhealthy occupation, which required continued stooping, and caused deformed backs. Now, however, two or three girl machinists can do as much "stabbing" as thirty children were able to do by hand. At present young girls are employed in basting, tacking, fitting, &c., and the children in tying knots, putting in eyelets and laces, and various odd jobs of the kind. In some of the provincial factories, the work is altogether finished in them, while in others the material is cut out and distributed to the "closer," the "maker," or the "finisher," who work at home. The old fashion of stitching with the "clamps" has been superseded by the system of riveting the soles on to the uppers, and as in the case of "closing," has dispensed with a good many hand-workers. In the latter process, indeed, the sewing machine is capable of anything. For a long time after it was used for lighter work, heavy boots, like Wellingtons, were closed by hand; but it has been subsequently so much improved, that by its means a woman can "close" a pair of navvy's boots weighing 7 or 8 lbs. per pair, and with soles three-quarters of an inch thick. The "maker," who in old days was represented by the cobbler with his awl and waxed thread, is now frequently supplemented by the riveter, who has a boy to help him. The "finisher" takes the boot in its rough state, and fastening it upon his knee, uses a burnishing iron to it, an operation called "staking." "Clickers" and "trenchers" are men who cut out, in different modes, the material for the upper

leathers, which, in the case of an ordinary elastic boot, is composed of six different pieces; and the test of a clever clicker is, to cut them out with the least possible waste of material.

It is probable that very sweeping changes will ere long be made in the boot trade; for new machinery is constantly appearing, which must necessarily alter the old state of things. At a factory in Newcastle-under-Lyme, the whole of the boot is made in this way, and to a very large extent by women, who, by various ingenious machines, close the uppers, sew on the welts and insoles, "last" the boots at the rate of one hundred and fifty pairs a day, and tack on and stitch the soles. Bootmaking is not usually considered a healthy occupation, although it is more so than tailoring. Factory work is for obvious reasons better than "garret" work, where the evils of crowding and want of ventilation are sure to be felt; but where hand work is carried on, the sedentary occupation and the constrained position tell hardly against a good many. The riveters are said to suffer from nervous affections, from the noise caused by the hammering; and the habit of putting the brass nails into the mouth tends to produce excoriations, which are rather difficult to heal. The machinists suffer more in boot work than in ordinary sewing, owing to the heavy character of the double-action machine. Many of the workers on patent or enamelled leather are liable to affections of the eyes, induced partly by the dazzle of the material, and partly by the quantity of gas which is kept burning in the

machinists' room. The death rate of the shoemaker is below the average, except at twenty and twenty-five, according to the returns of 1871:

Total.	5–	10–	15–	20–	25–	35–	45–	55–	65–	75
4091	..	3	82	192	416	438	587	724	844	805

Wages, as regarding women, are not always satisfactory, for it was stated lately in an industrial newspaper,* that in Bristol they had been paid 2*s.* 2*d.* for joining a dozen uppers, but that this sum had been reduced to 1*s.* 10*d.*, and would probably be still further curtailed to 1*s.* 2*d.* In factories, however, the wages are good; and in some, like the one at Newcastle, piece and day work are combined. Both girls and boys commence on a three years' agreement, at from 6*s.* to 7*s.* per week for the first year, and a shilling additional each subsequent year. But besides this, 5*s.* to 8*s.* may be made over and above the fixed wages.

The exports of boots and shoes within the ten years were:

Year.	Dozen Pairs.	Value.
		£
1866	295,802	998,888
1867	274,036	952,804
1868	439,265	1,397,606
1869	436,329	1,326,792
1870	372,599	1,148,423
1871	506,928	1,513,771
1872	579,130	1,695,248
1873	527,694	1,707,886
1874	410,114	1,374,302
1875	462,840	1,517,267

* 'The Beehive.'

IV. Glovers and Hatters.

The number of English glovers and hatters, in 1871, was:

	Male.	Female.	Total.
Glovers	1,594	15,217	16,811
Hatters	13,540	8,238	21,778

Gloving, it will be seen, is essentially a woman's occupation, and the making of hats that of a man, the greater portion of the female workers engaged in this latter trade, being employed in the straw hat manufacture at Luton and Dunstable, to which I have referred in a previous chapter (page 117). When we speak of the glove trade, it is understood to be that of leather or kid gloves, those of knitted material being carried on under the title of hosiery. London, Worcester, Evesham, and Yeovil are the principal localities for the glovers, who are not often associated in anything like factory work, but for the most part follow their occupation at home. The Factory Returns state that there were, in 1871, thirteen factories in England, employing 1938 hands. From the ages at the time of the Census, it would appear that the majority of the glovers are young women.

5–	10–	15–	20–	25–	35–	45–	55–	65–	75
80	1409	2703	2346	3487	2317	1595	815	361	94

In addition to the numbers above given, a small body of workpeople is engaged in making stuff gloves, called "fabric," as distinguished from leather, the material being sent down from London into the country, where it is cut out and sewn together. The preparing of the skins and the cutting of the gloves are usually done by men, "who with shears cut the piece into strips, from which are made the thumbs, and oblong shapes, which are punched out by means of a die called a 'web,' and a hand press; the palm, back, and fingers, which are thus in one flat piece, are then rolled up with the other parts and distributed to be sewn, the backs having been first given out to be 'pointed' or 'tamboured' as the case may be. Pointing, or plain sewing at the back, is performed by the aid of what is called an 'engine.' This consists of a small brass vice with grooves or teeth on each side, fixed at the top by a slight wooden stem, which springs from a flat stand; the teeth open and close by means of a spring worked by the foot. The whole instrument is very small and light; when in use, the girl, sitting on a low stool, holds the stem between her knees, her feet being on the stand; the back of the glove is firmly held between the teeth, so as to be level with the top of them, while the needle is passed through each pair of grooves in succession and the silk sewn over."* Boys are occupied in rolling up the material into packets for the home workers to take away, and also in putting studs in, and punching out thumbs by means of a hand press. The vast majority of glovers are brought up to

* Children's Employment Commission, 2nd Report, 1864.

the trade from infancy, somewhat in the same fashion as in the pillow lace and straw plait districts. From the localization of the trade being in pretty country towns, such as Evesham and Yeovil, one would be apt to think that ill-health was rare; but this does not seem to be the case, for glovers are described as being pale and narrow-chested, from working for many hours a day over their tambour frames in an ill-ventilated little room. The evidence of those who were qualified to judge at the time of the Children's Employment Commission, in 1864, was not very favourable to the state of morality in the gloving towns. The wages are paid by the piece; a good glover being able to earn from 4*s.* to 5*s.* per dozen pair of best gloves, and an ordinary hand from 3*s.* to 4*s.*

Hatters and cap makers are factory workers, although in the latter division a great deal of work is performed at home. In 1871 there were:

	No. of Factories.	No. of Sewing Machines.	Children under 13.	Males up to 18.	Above 18.	Females.	Total.
England	112	926	223	799	3474	3894	8390
Scotland	9	179	..	28	272	558	858
Ireland	2	2	..	6	78	53	137
Total	123	1107	223	833	3824	4505	9385

Although hatters are to be found in every town in the kingdom of any size, the chief localities for the trade are London, Stockport, and Oldham; in the two

latter of which hatting has been a speciality for many years. The principal occupations for the men are body making, finishing, shaping or "tipping," and "planking," in which last women, girls, and boys also assist. Both body making and planking are usually done at home, in sheds attached to the dwelling-house. The following is the *modus operandi* of this latter process. In the middle of the shed is an octagonal kind of table, from the outside edge of which the eight plane surfaces slope towards the centre; in the middle of this is placed some hot water, in which is dissolved shell-lac in a weak solution of ammonia. The worker at each plane dips the felt into the mixture, and rolls it on the plane, so as to harden it and reduce it to the proper dimensions. The ammonia, volatised by the heat, is given out into the atmosphere in rather considerable quantities, but it does not appear to render the occupation unhealthy. Women are also employed in sewing the silk used in an ordinary black hat into the shape required for blocking, sewing the linings and the inside leather band, an operation known as "lashing"; also in cutting off the ends of the thread (piecing off), which the binders leave.

Hatters earn good wages, and especially the "tippers" or "shapers," who are the picked men of the trade, and can make, in good times, from 5*l.* to 6*l.* per week. Body-makers' earnings are about 35*s.* to 40*s.*, and finishers', 40*s.* to 50*s.* Apprentices pay a premium of 10*l.* for seven years. A clever shaper can turn out sixteen dozen hats a week; but, as is so often the case

with special or highly-paid workmen, they are not famous for regularity of habits, but frequently absent themselves from work after pay day. Planking is very often a family occupation, by which four or five persons will make 5*l.* a week.

The exports of hats for the last decade are as follows:

Year.	Quantities.	Value.
	dozens.	£
1866	264,476	490,629
1867	271,868	510,031
1868	276,519	474,675
1869	329,409	511,472
1870	338,389	527,336
1871	452,153	668,681
1872	583,191	847,561
1873	597,943	880,787
1874	632,686	944,961
1875	757,686	1,045,440

by which it will be seen that a great increase has been steadily taking place in the demand for this article of apparel. Australia buys the greater number of our felt hats, and also of straw hats, next to France; while Germany, Belgium, and South Africa are the next largest consumers.

V. Seamstresses.

Though constituting a large numerical section of our population, this occupation need not detain us long, the two leading characteristics unfortunately

of this branch of labour being poor health and poor pay. Under the head of "shirt maker and seamstress," we have in the Census tables:

	Under 20.	Above 20.	Total.
England	10,831	69,207	80,038
Scotland	3,249	11,739	14,988
Ireland	28,421	53,363	81,784

A curious feature in this table is the extraordinary preponderance of this branch of domestic industry in Ireland over Scotland. The vast majority of seamstresses work at home, and with the needle, although the use of the sewing machine is increasing every year. But a machinist must be in a small way a capitalist, and, were it not for this, there is hardly a seamstress in the kingdom, who would not possess one out of the many machines which are candidates for public fame. Where the industry is carried on in large wholesale houses, the machining is usually done at the factory (as we may call it), while the finishing is given out to the home worker. In a shirt, for instance, the front, collar band, and wristband are generally machined in the factory, and then the portions are given out to be put together, as well as the buttons sewn on, the button-holes made, and so on. With most of the wholesale clothiers, an industrious seamstress (and a machinist always) can make good wages of from 12*s.* to 20*s.* per week; it is in the domestic phase that we find the miserable pay and intense labour, which the first Thomas Hood so pathetically described

in his "Song of the Shirt." It is, however, a mistake to always assume that, the cheaper the work, the less remunerative is it to the worker; for, as a rule, seamstresses prefer to have a cheap article to make (when paid by the piece), because they can make more by them than by a higher-priced one, which takes more time to complete and demands more care.

Some sewers lay themselves out for a certain class of work, such as shirts, collars, stays, neckties, braces; but, as a general rule, I fear that the statement made in Mr. Lord's Report, as long ago as 1864, will stand for the present day. "It appears that in the worst paid branches of needlework, except perhaps brace making, a woman of average ability and industry earns from 4*s.* to 6*s.* a week, if she is well supplied with work, reckoning the day at twelve hours, with time for meals. In trades of this class, home work is usually the least profitable, partly because more time is wasted, partly because the cheapest kind of work is most readily trusted out of the employer's custody. The result is, that less is earned in long hours at home, than in short hours in a work-room." Button-holing, for instance, is a kind of work which is very unequally paid. In respectable houses, 3*s.* 8*d.* per gross is given, or 11*d.* for three dozen; but under the sweating system, the poor seamstress has been known to get only 5*d.* for three dozen. From frequent reports in the public papers, we obtain a knowledge of the shameful way in which many of the workwomen are treated. One in particular, which occurred this very year (1876), was as follows. For five weeks the workers

had been paid by a certain firm 4*s.* 6*d.* per dozen for embroidering skirts, which in the busy season would bring up their earnings to 26*s.* or 28*s.* per week, but on the average of the year only to 9*s.* or 10*s.* At the end of this time, they were suddenly mulcted of 4*s.*, 5*s.*, and 6*s.* severally, for the same work, on the plea that a mistake had been made as to the previous prices. It is satisfactory to record, that the delinquents were made to pay up promptly. I am afraid that such cases are by no means solitary. It is also stated that from 10*d.* to 1*s.* 4*d.* only are prices commonly paid for machining throughout one of the holland costumes sold at from 12*s.* to 14*s.**

VI. Minor Trades in Dress.

I have only space to allude to a few of the less important (numerically) industries in dress, although collectively, the number of those engaged in what may be called the decorations of apparel is very large.

Artificial flower making (in the Census oddly placed under the head of carving and figures) numbered 4886, of whom 1740 were under, and 3146 above twenty years of age. It is one of the "season" trades, being exceedingly brisk twice a year for three or four months, about the spring and fall, and stagnant in the intervals. The majority of flower makers work at home or in small shops, there being, according to the Factory Returns, only thirteen factories, employing 1098 females. The routine of the occupation consists in cutting out from the material, whatever it may be,

* 'Women's Union Journal,' 1876.

sixteen folds at a time, by a hand stamp; colouring the leaves or petals with green, blue, or crimson, by a small brush; passing fine wires through the centre of each piece; twisting the thread round the wire to form the stalk; "goffering" the petals to make them curl; gumming, waxing, and dusting with potato flour, to represent bloom, or powdered glass for frost. Light and easy as the work looks, it has many sanitary drawbacks, apart from the small, close rooms in which the work is usually carried on. The children's fingers are cut by the wires and the silk, so as to cause minute sores. A great deal of impalpable colour dust is frequently floating about the room, which may or may not be extremely unwholesome. Scheele's green (an arsenite), and sulphate of copper (verdigris blue), were formerly much in vogue, and gave rise to many anomalous disorders, arising from contact with poisonous substances; but these colouring appliances are now used much less than they were. A more common evil is the mischief caused to the eyes, familiar to oculists as resulting in chronic inflammation of the eyelids or the form of weak sight, called asthenopia. This is particularly the case when white flowers are made by gaslight. The earnings of artificial flower makers vary very much, according to their age, the state of the trade, and the character of the shop in which they work. In 1871, women earned 14*s.* per week; girls, 4*s.*; and boys, 5*s.*, where the work was carried on in factories; but at the present time the average wages of a skilful worker in busy times will be from 20*s.* to 25*s.*; while a girl, of from thirteen to fifteen, learning the trade, can make 2*s.* 6*d.* to 3*s.* 6*d.* or 4*s.* 6*d.*, though for the

first six months they seldom earn more than 1*s.* per week.

The value of artificial flowers imported, principally from France, during the last ten years, was:

	£		£
1866	293,306	1871	367,186
1867	304,440	1872	411,540
1868	341,176	1873	449,320
1869	365,407	1874	447,051
1870	266,502	1875	510,800

Feather dressers, all of whom are females, numbered 1150, of whom 490 were under, and 660 above, twenty. The work is light, consisting principally in clipping and twisting the ostrich feathers (when they are from that source), scraping the quills, sewing pieces together, curling and mounting. As the material is valuable, there is little or no domestic labour, but everything is carried on in the work-rooms of wholesale houses. A large amount of ornamental feathers are annually imported into this country, that for 1875 being:

	Quantity.	Value.
	lbs.	£
Belgium	3,475	15,333
France	131,534	237,518
Egypt	26,665	50,229
Tripoli	4,041	14,853
Morocco	4,173	19,641
Argentine	10,678	8,422
Malta	4,722	9,441
South Africa	53,992	293,866
India	27,043	37,197
Other countries	29,387	26,699
Total	296,010	713,199

It will be observed that the greatest value arises from the ostrich feathers of the Cape of Good Hope.

The *umbrella* trade gives employment to a considerable number of persons, viz.:

	Under 20.	Above 20.	Total.
Males	539	2552	3091
Females	895	1909	2804
Total	1434	4461	5895

There is a somewhat curious localization of this trade, or at all events a portion of it, in the neighbourhood of Stroud, where a colony of workers is employed in making umbrella and parasol sticks and handles. The industry consists of cutting and shaping the sticks, which are mostly of beech or ash, turning and cutting the bone tips and handles with circular saws and drills, polishing, and varnishing with naphtha, methylated spirit, and shell-lac. The women in the trade are occupied in preparing the whalebones, and in the ordinary processes of sewing the silk, or of whatever material the umbrella is made. In the preparation of the sticks, as also of walking-sticks, the outside is sometimes charred, the workmen using an open coke stove, and in these cases they are liable to suffer from the effects of the carbonic oxide disengaged. The value of umbrellas and parasols exported in 1875 amounted to 356,467*l.*, of which Bengal and Burmah took by far the greater part. Australia, Japan, the Straits Settlements, and the Philippine Islands are also large customers.

The following are the statistics of our clothing and dress trade as regards value of exports:

Year.	Apparel and Slops.	Haberdashery and Millinery.
	£	£
1866	2,871,308	5,396,775
1867	2,205,991	4,431,492
1868	2,313,589	4,479,158
1869	2,392,317	4,584,955
1870	2,205,255	4,813,023
1871	2,707,499	5,901,979
1872	3,112,452	6,640,827
1873	3,437,410	6,597,257
1874	3,200,853	6,140,460
1875	3,185,325	4,992,420

Of apparel and slops Australia takes the most, followed in degree by North America, South Africa, and Egypt. For haberdashery and millinery our best customers are Australia, North America, the United States, South Africa, the Argentine Republic, and the West Indies.

CHAPTER IX.

LEATHER, ROPES, AND INDIA-RUBBER.

I. Leather.

The number of persons engaged in the tanning and curriers' trades is very considerable, though the female proportion is but small. According to the Census tables they were—

	Fellmongers.	Tanners.	Curriers.	Total.
England	2,017	8,624	14,204	24,845
Scotland	684	768	1,347	2,799
Ireland	39	574	722	1,335
Total	2,740	9,966	16,273	28,979

The great bulk of these men work in separate establishments, for tanning and currying are trades which are scattered throughout the country towns: nor are many young people employed in them. According to Mr. Sparke Evans, the country tanneries are becoming more and more scarce, and large numbers have been closed within the last few years. The Factory Returns give the following statement of associated workers:

	No. of Factories.	Children under 13.	Males up to 18.	Above 18.	Females.	Total.
England ..	50	18	614	4,622	390	5,644
Scotland ..	1	..	7	117	11	135
Ireland ..	2	..	20	239	48	307
Total ..	53	18	641	4,978	449	6,086

Mr. Collins, in his interesting article on Leather and Hides,* has shown us the sources from whence come the different skins, and also the numerous semi-chemical processes employed in tanning them. The principal stages of the operation are the cleansing and dressing of the hides, the tanning proper by immersing the hides in pits, and subjecting them to various chemical influences, tawing (where the method of preparing leather is by the action of salts of alumina), shamoying, or oil tanning, &c., besides many subsidiary processes, such as enamelling, stamping, dyeing, and varnishing the different kinds of leather after they have emerged from the tannery. Machinery, though as yet of no great extent, is coming more and more into use, and is employed in expressing the grease, washing, and, above all, splitting—a most ingenious process, by which a sheepskin can be split into four, by a knife which moves backwards and forwards a thousand times per minute.

I have not been able to ascertain whether any one of the processes in tanning or currying is particularly unsanitary, although, as everybody knows, they are unsavoury; but the Registrar-General, in his Supplemental Report, 1875, remarks that these operatives are healthy up to forty-five, and then show signs of suffering. The health of tanners, indeed, is proverbially good, as most of the work is done in the open air or sheds; were it otherwise, it is probable that the ammonia and sulphuretted hydrogen given off would be very prejudicial. Curriers, however, who

* 'British Manufacturing Industries.'

work in close, gas-heated rooms, are decidedly more unfavourably situated. The mortality tables were (1871):

	Total.	5–	10–	15–	20–	25–	35–	45–	55–	65–	75
Fellmongers	36	..	..	1	1	5	5	9	6	4	5
Tanners	161	..	..	3	2	18	22	22	37	38	19
Curriers	275	..	..	8	15	38	48	36	51	50	29

and the mortality per cent. as compared with all classes:

	15–	20–	25–	35–	45–	55–	65–	75
Tanners and Curriers	·282	·555	·878	1·394	1·949	3·548	8·113	13·900
All classes	·632	·859	·985	1·305	1·853	3·215	6·676	16·584

The operatives in this trade usually earn good wages; according to the Factory Returns in 1871:

Skinners	38*s.* per week.
Shearers and finishers	37*s.* „
Curriers	33*s.* „
Enamellers, Japanners	32*s.* „
Finishers	23*s.* „
Tanners	23*s.* „
Boys	11*s.* „
Jobbers	21*s.* „
Dyers	24*s.* „
Wool-rag dressers	24*s.* „
Women sewing skins	10*s.* 6*d.* „
Mechanics	31*s.* „

At the present (1876), the average wages of tanners in the country are 22*s.* per week; but in London, about 27*s.* Curriers earn 35*s.*

The imports and exports of the leather trade are very important.

The exports of hides, tanned and untanned, for the decade were:

Year.	Quantities.	Value.
	cwts.	£
1866	1,133,131	3,356,969
1867	975,168	3,098,800
1868	1,033,753	3,636,592
1869	954,120	3,311,000
1870	1,302,232	4,601,657
1871	1,447,898	5,035,613
1872	1,679,108	6,701,686
1873	1,621,676	6,700,661
1874	1,538,079	6,831,432
1875	1,583,905	7,017,413

and the number of skins as follows:

Year.	Sheep and Lamb (Undressed).	Sheep and Lamb (Tanned or Dressed).	Seal.	Goat (Undressed).	Goat (Dressed).
1866	4,300,968	1,831,139	513,671	978,096	2,162,054
1867	4,359,389	2,392,597	743,511	848,951	2,435,820
1868	4,573,815	2,267,053	780,477	874,139	2,579,341
1869	4,402,650	2,822,095	736,336	797,603	3,051,995
1870	6,004,944	2,963,608	731,913	848,631	3,088,341
1871	8,460,328	2,156,979	833,709	1,057,712	4,035,978
1872	8,219,014	2,824,072	657,697	1,132,054	4,605,266
1873	8,363,736	3,760,619	876,077	1,358,895	5,456,709
1874	6,559,311	3,628,998	755,005	1,436,288	5,506,678
1875	7,165,342	4,913,696	629,723	1,397,225	5,393,504

The imports of the foreign tanning (chemical) materials will be found under the head of dye stuffs at p. 130, consisting principally of valonia, or the

dried acorn cup of the *Quercus ægilops*, shumach, or the twigs of the *Rhus coriaria*, cutch, or the extract of the heart-wood of the *Acacia catechu*, and gambier, or an extract from the *Uncaria gambir*. The dry hides (not tanned) come principally from Bengal, Holland, South Africa, the United States, and Brazil; the wet ones from Uruguay, the United States, the Argentine, and Australia; the tanned hides from the United States, Madras, and Australia; the tawed hides from France and America. The annual value of the tanning substances employed is 4,500,000*l*.

The exports of leather (unwrought) principally to Germany and France were:

Year.	Quantities.	Value.
	cwts.	£
1866	38,900	438,170
1867	44,840	428,233
1868	64,083	577,669
1869	91,246	765,620
1870	103,788	850,495
1871	139,881	1,136,784
1872	139,019	1,220,981
1873	116,445	1,048,909
1874	148,246	1,319,363
1875	168,147	1,495,831

II. Ropes and Cordage.

Properly speaking, this subject should come under that of the fibrous materials, such as jute, flax, and others; but the occupation differs in so many details, at I include it here. Rope making gives employ-

ment to a great number of people, according to the Census:

	Males.	Females.	Total.
England	10,294	1,401	11,695
Scotland	2,353	351	3,704
Ireland	986	31	1,017
Total ..	13,633	1,783	15,416

and many young boys are brought up to the trade, as shown by the ages table:

5–	10–	15–	20–	25–	35–	45–	55–	65–	75
102	1702	1237	856	1745	1643	1385	882	543	199

The Factory Returns give the numbers at:

	No. of Factories.	Children under 13.	Males up to 18.	Above 18.	Females.	Total.
England ..	14	245	352	508	191	1296
Scotland ..	7	7	145	111	47	310
Ireland ..	3	..	58	120	..	178
Total ..	24	252	555	739	238	1784

showing that rope making is more of a domestic than a factory industry. Mr. P. L. Simmons has told us, in his article upon Fibres and Cordage,* of the numerous materials that have been used of late years for the

* 'British Manufacturing Industries.'

purposes of rope manufacture. The chief places where roperies of any extent are found are London, Manchester, Liverpool, Birmingham, Warrington, Bristol, and Bridport, although they may exist in any place where the requisite room for a rope-walk can be obtained. The differences, however, between a country rope-walk, where everything is done by hand, and a large town establishment where machinery is everything, are so great, as almost to make them separate trades. In factories like the latter, the hemp is heckled and spun into yarn on the premises, in one continuous operation, and machinery is also employed in forming the strands of the ropes made of Manilla hemp; though for those of Russian hemp, hand-work is still used. The operations of hemp heckling and dressing are dusty ones, and when care is not taken to divert the dust into a current of air, will produce very unpleasant consequences. Dr. Richardson thus speaks of it in his 'Lectures on Unhealthy Occupations':* "The quantity of dust lost in hemp dressing may be inferred from the fact, that for every 112 lbs. weight of hemp employed, there is a loss of 4 lbs. This dust produces a most severe irritation, which, however, is purely bronchial, attended with painful expectoration and strangling cough. Russian and Polish hemp will produce these effects. Neapolitan hemp does the same, and something more. In the dust of the Neapolitan hemp there is distributed a peculiar odorous substance, the dust of some vegetable or grass, the inhalation of which causes shortness of breath, con-

* 'Society of Arts Journal,' Jan. 1876.

striction of the throat, and spasmodic cough in recurrent paroxysms, which continue for many hours after the inhalation ceases. For the sake of experiment, I obtained a specimen of this hemp, and after shaking it in a large bottle, I inhaled the dust, when the symptoms induced were immediate. Even dressing the hemp does not remove this substance, for the symptoms are common to the spinners of the hemp after it is dressed, although they work in the air." Bridport, in Dorsetshire, is a great locality for hand spinning of twine and string, the spinner walking slowly backwards, facing the wheel, to draw out the fibres from the wheel which twists them. When some twines have been twisted, the spinner walks briskly forward to the wheel, laying them together, for which purpose the wheel is turned very quickly. The spinners are mostly women, and the turners children. "Combing" requires more strength, the work being to break off a handful of fibre from a hank, and draw it with the hand between the teeth of a comb. The combers, who are usually men, but sometimes boys, work standing, with the right knee bent inwards, and the foot outwards, causing a deformity in the case of growing lads. Beyond the points which I have mentioned, and the inclemency of the weather to which the spinners are subject, except in Scotland, where all rope-walks are covered in, I am not aware of any other unsanitary conditions of the trade. The mortality of the occupation is thus given by the Registrar-General (1871):

	Total.	5–	10–	15–	20–	25–	35–	45–	55–	65–	75
Hemp	11	..	..	1	..	1	1	3	..	3	2
Ropes	207	..	..	7	5	16	20	37	44	41	37

and the mortality per cent.:

	15–	20–	25–	35–	45–	55–	65–	75
Ropes	·403	·613	·760	1·103	2·301	4·181	7·863	17·638
All classes ..	·632	·859	·985	1·305	1·853	3·215	6·676	16·584

The legislation especially affecting rope makers, dates from 1846 (9 & 10 Vic. c. 40), when the Rope-walks Exemption Act was passed, declaring that hand-rope makers did not come under the factory laws. Where machinery is at work, driven by steam power, the walks are now under the Factory Acts, but where hand-making only is in operation, they are under the Workshops Act of 1867, a condition of things which does not altogether please the owners. One of the witnesses before the Factory and Workshops Acts Commission stated: "In 1867 I manufactured 3192 dozens of a certain class of twine, and to show the influence which the Act of that year had, I had fallen in 1868, to 2803; in 1869, to 2349; in 1870, to 2306; in 1871, to 2276; in 1872, to 2219; in 1873, to 1942; and in 1874, to 1688. The Act has made labour so much dearer, that foreigners cut us out, and, in fact, I had a man from France the other day, who offered

me hand-spun twines at a less price than I could produce them at."

The wages of rope making, which is generally a well-paid trade, are as follows:

	1871.
Rope-yarn hand spinners ..	..23*s.* to 27*s.* per week.
Twine spinners, men	30*s.* „
„ boys	5*s.* „
Machine spinners, men	24*s.* „
„ boys	9*s.* „
„ women	7*s.* „
Machine rope makers, men	22*s.* „
„ „ lads	5*s.* to 15*s.* „
Warehousemen	22*s.* „
Engineers	28*s.* „

Our imports of hemp were as follows:

Year.	Quantity.	Value.
	cwts.	£
1866	996,219	1,713,277
1867	869,571	1,634,965
1868	1,046,135	2,055,481
1869	1,022,110	1,907,959
1870	1,079,608	2,034,326
1871	1,245,019	2,267,571
1872	1,115,946	2,111,240
1873	1,252,515	2,321,706
1874	1,236,475	2,190,224
1875	1,321,559	2,214,666

the dressed hemp coming principally from Germany and Italy; the rough or undressed, from Rome, the Philippine Islands, and Italy, which last country also sends us most of the tow or codilla from hemp.

The exports of cordage and twine were:

Year.	Quantity.	Value.
	cwts.	£
1866	149,222	412,729
1867	112,305	317,621
1868	115,038	330,300
1869	116,165	329,365
1870	126,764	354,355
1871	131,382	366,365
1872	139,180	403,119
1873	120,485	359,643
1874	128,722	361,282
1875	111,232	306,945

of which North America and Australia take the greatest portion.

III. India-rubber.

The numbers engaged in the india-rubber and gutta-percha manufactures are not large, being, in 1871, in England, 3782 males and 892 females. The trade is entirely carried on on the factory system, there being no domestic industry under this head. The Factory Returns give, for—

	No. of Factories.	Children under 13.	Males up to 18.	Above 18.	Females.	Total.
England ..	33	11	414	985	2298	3708
Scotland ..	6	25	388	775	849	2037
Total ..	39	36	802	1760	3147	5745

Mr. Collins has given us a full account* of the various kinds of india-rubber and gutta-percha, and the modes in which they are manipulated. The chief processes are, the slicing by machinery of the material,

* 'British Manufacturing Industries.'

so as to purify it, deviling, washing, drying, beating, kneading or masticating, and rolling into bands, so as to be qualified for tubing, string, piping, and the thousand and one forms in which rubber or gutta-percha are made useful. "Vulcanizing is effected by immersion in a sulphur bath, by incorporating, by rolling and subjecting to heat, or by Mr. Parkes' cold process, by which its plasticity enables it to be moulded into any form, even with greater facility than wax." The work is almost entirely carried on by machinery, some of which is sufficiently simple to allow of lads being employed at it; such as rolling and winding waterproof cloth, moulding balls, tieing threads, pressing together the sides of the tubing, pouches, &c. Rolling of the different kinds of machine bands, hose pipes, and steam packing, the punching of mats, and a few other minor things are still done by hand. For insulating submarine telegraph wires, a rather different class of labour is required in manipulating the india-rubber. There appears to be nothing unhealthy in the various branches, except, perhaps, during the "cold" process, in which chloride of sulphur is mixed with bi-sulphide of carbon or naphtha, the result of the decomposition being to generate hydrochloric and sulphurous acids, sulphuretted hydrogen, and probably, chloride of carbon. But this process is confined to a few articles, such as elastic thread; and the men, in addition to working in separate and well-ventilated rooms, generally wear respirators. The use of iodine, chlorine, and bromine has lately been introduced into the manufacture, but as yet no ill effects have arisen from them.

The weekly wages of india-rubber operatives in 1871 were as follows:

Skilled workmen	26*s.* to 60*s.*
Ordinary „	16*s.* „ 25*s.*
Boys	12*s.* „ 14*s.*
Women	9*s.* „ 18*s.*
Threaders (men)	20*s.* „ 21*s.*
Mixers „	16*s.* „ 18*s.*
Vulcanizers „	17*s.*
Finishers „	16*s.*
Lathe hands	12*s.* „ 14*s.*

At present (1876) the wages vary from 20*s.* to 40*s.* for adult labour, according to the degree of skill required. Women are employed in the waterproofing branch for sheets, water beds and cushions, as also in small tubing and gas-piping, earning 10*s.* to 15*s.* or even 20*s.* per week, working ordinary factory time, and even more when on piecework. In the insulating branch, adult females earn 9*s.* to 10*s.*; lads, from 8*s.* to 12*s.*; men, about 18*s.*; and machine hands, from 16*s.* to 30*s.*

The imports of caoutchouc and gutta-percha were:

CAOUTCHOUC.

Year.	Quantity.	Value.
	cwts.	£
1866	72,176	728,416
1867	79,756	696,377
1868	145,584	1,195,226
1869	136,421	1,134,585
1870	152,118	1,597,628
1871	161,085	1,684,281
1872	157,114	1,762,259
1873	157,436	1,746,095
1874	129,163	1,326,605
1875	153,564	1,570,558

GUTTA-PERCHA.

Year.	Quantity.	Value.
	cwts.	£
1866	15,134	78,109
1867	15,289	92,945
1868	16,279	91,850
1869	15,398	95,616
1870	34,514	496,951
1871	26,211	199,337
1872	44,597	399,955
1873	54,898	479,316
1874	29,970	299,522
1875	19,627	149,223

Brazil, Bengal, and the West Coast of Africa send us the largest supplies of caoutchouc; and the Straits Settlements of gutta-percha.

FOOD MAP
Agricultural land
Pastoral "
IRISH SEA
NORTH SEA
ENGLISH CHANNEL
Bristol Channel
WHEAT
RYE
OATS
POTATOES
CHEESE
BEER
BACON
HOPS
ORCHARDS
CYDER
BARLEY
FISHERIES
HERRING FISHERIES
ISLE OF MAN
Newcastle
Durham
Cleveland
Liverpool
Manchester
Leeds
Bradford
Sheffield
Nottingham
Lincoln
Norwich
Yarmouth
Cambridge
Ipswich
Oxford
Bristol
Cardiff
Reading
Southampton
Exeter
Plymouth
Penzance
Falmouth
Dover
Hull
Berwick
Carlisle
Whitehaven
Workington
Douglas
Ramsey
Bangor
Holyhead
Chester
Birmingham
Coventry
Stafford
Leicester
Derby
Gloucester
Swindon
Salisbury
Winchester
Portsmouth
Weymouth
Torquay
Taunton
Bridgewater
Barnstaple
Tintagel
Land's End
St Ives
Truro
Helston
Aberystwith
Aberdovey
Llandudno
Ambleside
Lancaster
Preston
Wakefield
Huddersfield
Halifax
Blackburn
Stockton
Middlesbro'
Guisboro'
Durham
Barnard Castle
Tynemouth
Berwick
Aberdeen
Inverness
Edinburgh
Glasgow
Dundee
Perth
Stirling
Greenock
Ayr
Wick
Kelso
Hawick
Galashiels
Jedburgh
Dumfries
Annan
Carlisle
Penrith
Kendal
Morecambe B.
Solway Firth
Tweed R.
Tees R.
Wear R.
Tyne R.
Humber R.
Wash
The Naze
The Nore
Thames R.
Severn R.
Dee R.
Mersey R.
Ribble R.
Trent R.
Ouse R.
Yare R.
Stour R.
Medway R.
Kennet R.
Avon R.
Exe R.
Tamar R.
Lizard Pt.
Start Pt.
Portland Bill
Beachy Head
North Foreland
Flamborough Head
Spurn Head
Lowestoft
Yarmouth
Harwich
Colchester
Ipswich
Bedford
Northampton
Coventry
Worcester
Gloucester
Hereford
Shrewsbury
Stafford
Derby
Nottingham
Lincoln
Boston
Peterborough
Cambridge
Ely
Newmarket
Thetford
Norwich
Yarmouth
Lowestoft
Ipswich
Colchester
Chelmsford
Maidstone
Canterbury
Dover
Folkestone
Hastings
Brighton
Chichester
Portsmouth
Southampton
Salisbury
Winchester
Basingstoke
Reading
Oxford
Aylesbury
Luton
Hertford
Watford
Uxbridge
Windsor
Guildford
Dorking
Kingston
Croydon
Sutton
Epsom
Richmond
Hampton Court
Twickenham
Brentford
Hounslow
Staines
Egham
Chertsey
Weybridge
Woking
Farnham
Aldershot
Alton
Petersfield
Midhurst
Arundel
Worthing
Shoreham
Lewes
Eastbourne
Hastings
Tunbridge Wells
Sevenoaks
Gravesend
Rochester
Chatham
Sheerness
Margate
Ramsgate
Deal
Sandwich
Ashford
Tenterden
Rye
Winchelsea
Battle
Bexhill
Newhaven
Seaford
Eastbourne
Beachy Head
Dungeness
Romney Marsh
Isle of Wight
Cowes
Ryde
Newport
Sandown
Shanklin
Ventnor
Freshwater
Yarmouth
Needles
Alum Bay
Totland Bay
Christchurch
Bournemouth
Poole
Wareham
Swanage
Weymouth
Portland
Lyme Regis
Bridport
Dorchester
Sherborne
Yeovil
Crewkerne
Chard
Honiton
Exeter
Exmouth
Sidmouth
Budleigh Salterton
Dawlish
Teignmouth
Torquay
Paignton
Brixham
Dartmouth
Totnes
Kingsbridge
Salcombe
Plymouth
Devonport
Saltash
Liskeard
Looe
Fowey
Par
St Austell
Mevagissey
Falmouth
Truro
Redruth
Camborne
Hayle
St Ives
Penzance
Marazion
Helston
Lizard Pt.
Land's End
Scilly Isles
Bristol
Clifton
Avonmouth
Weston-super-Mare
Burnham
Minehead
Dunster
Taunton
Wellington
Tiverton
Cullompton
Axminster
Lyme Regis
Charmouth
Bridport
Abbotsbury
Weymouth
Portland
Swanage
Corfe Castle
Wareham
Poole
Christchurch
Lymington
Yarmouth
Newport
Ryde
Cowes
Southampton
Eastleigh
Romsey
Andover
Basingstoke
Reading
Wokingham
Bracknell
Windsor
Slough
Uxbridge
Watford
Hemel Hempstead
Berkhamsted
Tring
Aylesbury
Amersham
High Wycombe
Henley-on-Thames
Wallingford
Abingdon
Oxford
Witney
Chipping Norton
Banbury
Daventry
Rugby
Nuneaton
Tamworth
Lichfield
Burton
Uttoxeter
Ashbourne
Matlock
Chesterfield
Mansfield
Worksop
Retford
Gainsborough
Scunthorpe
Barton
Brigg
Grimsby
Louth
Horncastle
Spilsby
Skegness
Boston
Sleaford
Grantham
Newark
Southwell
Retford
Doncaster
Pontefract
Wakefield
Dewsbury
Batley
Bradford
Keighley
Skipton
Settle
Clitheroe
Blackburn
Accrington
Burnley
Colne
Nelson
Barnoldswick
Skipton
Ripon
Harrogate
Knaresborough
Wetherby
Tadcaster
York
Selby
Howden
Goole
Beverley
Hull
Driffield
Bridlington
Scarborough
Whitby
Guisborough
Saltburn
Redcar
Middlesbrough
Stockton
Darlington
Richmond
Catterick
Northallerton
Thirsk
Malton
Pickering
Helmsley
Kirkbymoorside
Scarborough
Filey
Bridlington
Driffield
Beverley
Hull
Brough
Barton
Scunthorpe
Gainsborough
Lincoln
Sleaford
Boston
Spalding
Peterborough
Wisbech
March
Ely
Cambridge
Saffron Walden
Bishop's Stortford
Harlow
Epping
Romford
Ilford
Barking
Dagenham
Tilbury
Gravesend
Dartford
Bexley
Woolwich
Greenwich
Deptford
Lewisham
Croydon
Bromley
Orpington
Sevenoaks
Tonbridge
Tunbridge Wells
Uckfield
Lewes
Newhaven
Seaford
Eastbourne
Hastings
Battle
Rye
Winchelsea
Dungeness
Romney Marsh
Folkestone
Dover
Deal
Sandwich
Ramsgate
Margate
Whitstable
Faversham
Sittingbourne
Chatham
Rochester
Maidstone
Ashford
Tenterden
Cranbrook
Hawkhurst
Battle
Bexhill
Hastings
Eastbourne
Brighton
Worthing
Littlehampton
Chichester
Havant
Portsmouth
Fareham
Gosport
Alverstoke

CHAPTER X.

FOOD INDUSTRIES.

By far the largest industrial proportion of our population appears to be occupied directly or indirectly with the feeding of the country; but beyond laying before my readers a table of their numbers, I shall describe only a few of the principal employments, as the great division of agriculture, with all the statistics of land and produce, is quite sufficient to fill a volume of its own. The Census of 1871 gives the following statement:

	England.		Scotland.		Ireland.		Total.
	Male.	Female.	Male.	Female.	Male.	Female.	
Land.							
Farmers and graziers	225,569	24,338	48,396	6,817	392,251	31,391	728,762
Farmers' sons, &c.	76,466	92,187	63,247	114,072	16,473	72,802	435,247
Farm bailiffs ..	16,476	..	2,915	..	136	..	19,527
Labourers	764,574	33,513	70,924	22,174	174,670	17,741	1,083,596
Shepherds	23,323	..	8,352	..	1,953	..	33,628
Farm servants ..	134,157	24,599	40,115	20,615	270,059	45,321	534,866
Gardens.							
Nurserymen ..	5,113	382	719	126	283	42	6,665
Gardeners	95,829	2,240	7,926	154	8,664	94	114,907
Animals.							
Cattle salesmen..	5,836	..	953	..	4,118	23	10,930
Drovers	2,950	..	200	..	402	..	3,552
Gamekeepers ..	12,429	..	3,505	..	976	..	16,910
Fishermen	20,679	364	26,267	1,029	9,438	108	57,885
Carried forward	1,383,401	177,623	273,519	164,987	879,423	167,522	3,046,475

	England.		Scotland.		Ireland.		Total.
	Male.	Female.	Male.	Female.	Male.	Female.	
Animal Food.							
Brought forward	1,383,401	177,623	273,519	164,987	879,423	167,522	3,646,475
Cowkeepers, Milksellers ..	16,441	4,117	1,590	1,722	1,662	1,096	26,628
Cheesemongers ..	4,249	425	147	39	322	1,541	7,123
Butchers	72,682	3,165	5,544	175	6,938	401	88,905
Provision dealers	8,771	4,405	1,214	735	2,208	866	18,259
Poulterers	2,696	689	166	36	692	271	4,550
Fishmongers ..	12,646	2,234	1,278	785	1,112	910	18,965
Vegetable Food.							
Corn dealers ..	11,964	801	1,741	48	1,538	52	16,144
Millers	29,720	340	3,607	20	3,925	61	37,673
Bakers	52,733	6,333	11,786	906	8,661	392	80,814
Confectioners ..	9,387	7,601	1,363	1,133	475	852	20,811
Greengrocers ..	18,983	6,836	859	863	611	1,909	30,061
Drinks.							
Maltsters	10,274	..	845	1	685	..	11,805
Brewers	25,562	269	1,306	24	640	6	27,807
Wine merchants	10,576	393	608	59	1,156	115	12,907
Cellarmen	3,205	..	817	..	201	..	4,223
Aërated water manufacturers	2,410	..	199	7	164	..	2,780
Miscellaneous.							
Sugar refiners ..	2,781	..	950	1	36	..	3,768
Grocers	88,598	22,496	13,933	5,117	9,089	2,232	141,465
Tobacco	10,115	4,252	1,337	427	1,374	96	17,601
Total	1,777,194	242,039	322,809	177,085	921,315	178,322	3,618,764

To this large body must be added those who cater for the public in inns and hotels, viz.:

	England.		Scotland.		Ireland.		Total.
	Male.	Female.	Male.	Female.	Male.	Female.	
Innkeepers and publicans ..	61,158	15,891	1,923	1,002	6,067	2,096	88,137
Beersellers	13,209	3,152	3,828	822	48	34	21,093
Boarding-house keepers	3,840	22,092	316	8,238	417	2,104	37,007
Coffee-house ditto	3,305	2,147	147	318	21	45	5,983
Total	81,512	43,282	6,214	10,380	6,553	4,279	152,220

which, including 2554 workers in salt mines, brings the sum total up to 3,833,457. In round numbers, at the present time, we may estimate that four and a half million persons are engaged in providing our daily food, irrespective of foreign sources and supplies. The industrial preparation of food, putting aside agricultural pursuits, occupies but a small proportion of this great army, the major part consisting of purveyors and shopkeepers.

I. Bread and Biscuits.

The preparation of bread, as the staff of life, demands our first consideration amongst food industries. From the preceding table, we perceive that the bakers in the three kingdoms amounted to 80,814, of whom nine-tenths were males; indeed, the art of baking, except in a domestic sense, is almost entirely a man's occupation. The ages of those engaged in the trade are placed in the English Census at:

	Total.	5–	10–	15–	20–	25–	35–	45–	55–	65–	75
Males ..	52,733	9	2,323	8,670	7,550	11,598	8,782	6,712	4,301	2,174	614
Females ..	6,333	1	132	749	644	773	855	1,172	1,069	679	241

The process of baking is so far different from other industrial processes, that there are seldom any divisions of labour in the trade, although there are several stages to be gone through. The same man (or set of men) carries out the whole operation, and few classes of operatives are harder worked. The first stage, as Mr. Manley

tells us, in his article on Bread,* is to prepare the ferment to add to the flour; the second, the making or stirring of the "sponge," which takes about half an hour of careful and continuous manipulation. At midnight, for it must be remembered that while other people are sleeping, bakers are most active, the rest of the dough is made and thoroughly kneaded. At 3 A.M. the dough is commenced to be moulded for the oven, for which it is ready between 4 and 5 A.M., and the baking is concluded between 6 and 7, when the bread is "drawn." This, with variations, arising from the different kinds of bread required, is the nightly routine of thousands of operatives employed throughout the kingdom in bakeries of any importance, and especially those of our large towns, for in the country towns and villages there is not the same pressing demand for the matutinal supply of hot bread and rolls, and the baker can therefore choose his own time for work.

By a curious anomaly, bakers are not placed under the usual supervision of Factory or Workshops Acts, but are regulated by a law of their own. As long ago as 1848, certain grievances were complained of by those in the trade, and the subject was brought before the Houses of Parliament, who ordered an inquiry to be made into it. A committee of the House had made a report in 1815, recommending the abolition of the Bread Assize, under the impression that, by so doing, persons of capital would be attracted to the trade, and that consequently there would be a diminution of the waste of labour and unnecessary subdivision of profits.

* 'British Manufacturing Industries.'

As a matter of fact, these hopes were not fulfilled, for, with a few notable exceptions, the trade is still distributed amongst a number of small bakers.

An inquiry took place, and a report issued in 1862 by Mr. Tremenheere, the result being, the passing of the Bakehouses Regulation Act of 1863 (26 & 27 Vic. c. 40), which prohibited the employment of young persons under eighteen in a bakehouse between 9 P.M. and 5 A.M., and also the use, as a sleeping place, of any room on the same level with the bakehouse, except under certain provisions of ventilation. The state of things revealed by the inquiry was eminently unsatisfactory. The ordinary routine of night-work allows of some short period of time intervening after "making the dough," which the journeyman baker occupies in getting a little sleep, and, as the most convenient place, he selects the kneading board, which is also the covering of the trough in which the dough is made, upon which, with a sack under him and another for his pillow, he sleeps the sleep of the just. The surroundings of the bakehouses, at the time of Mr. Tremenheere's visitation, were exceedingly bad. "The principal fact, for which I certainly was not prepared, was their extreme dirt, and in many cases the almost total covering of the entire space between the rafters with masses of cobwebs, weighed down with the flour dust that had accumulated upon them, and hanging in strips just above one's head. A heavy tread or a blow upon the floor beneath, brought down large fragments of them; and as the rafters immediately over the troughs are as thickly hung with them as any other part of the bake-

house, masses of these cobwebs must be continually falling into the dough. The rafters were usually black with the sulphurous exhalations from the ovens, while animals, such as beetles, cockroaches, &c., in considerable numbers crawled in and out of and upon the troughs where the bread was made, and upon the adjoining walls." * When bread was hand-kneaded, as was the rule, "it is necessary," states a witness in the evidence, "to do the work forcibly, in order to prevent the dough getting cold; this causes men to get into a very great heat, and the perspiration naturally drops into the dough. I don't believe that a batch of bread is anywhere made without this happening." It is hard to say, in the face of these facts, which was most to be pitied, the baker who passed his time and did his work under such unsavoury conditions, or the public, which, in happy ignorance, was thus condemned to eat its daily peck of dirt.

It took some little time, after the passing of the Act, for the local authorities, whose business it was to administer it, to see that the clauses of the Act were enforced; and at the present day it is satisfactory to think that the greater portion of the bakeries are in, at all events, a moderately clean state. The use of machinery, as Mr. Manley has told us, such as Stephens' machine, has not proved generally successful; neither have the attempts to start large co-operative bakeries. As regards wages (1876), the men who work for the small retail baker earn, as a rule, about 26*s.* per week, with perquisites, such as a loaf of bread per day, sack

* Report relating to Journeymen Bakers, 1862.

money, and commission on yeast. The average time of commencing work is 11 P.M.; and after the bread is delivered to the out-door customers, and the dinners baked, he finishes his labour about 2 P.M. In large bakeries, however, such as that of Mr. Nevill, where 105 journeymen are employed, the baker gets about 30*s*., without perquisites, for a given amount of toil, overtime frequently amounting to 17*s* a week. Here he begins work at 7 P.M. and leaves off at 8 or 9 A.M. As a rule, the men employed in the large establishments are far superior in steadiness and cleanly habits to those in the retail shops. That the trade of a baker is very much more favourably conducted than heretofore, is also proved by the statement of the Registrar-General, that "bakers experience a mortality very little above the average, and that is chiefly at advancing ages."

The table of mortality is as follows (1871):

Total.	5–	10–	15–	20–	25–	35–	45–	55–	65–	75
404	..	..	4	16	34	22	31	40	34	23

and as compared with all classes:

	15–	20–	25–	35–	45–	55–	65–	75
Bakers	·275	·643	·867	1·347	1·979	3·611	7·140	19·045
All classes ..	·632	·859	·985	1·305	1·853	3·215	6·676	16·584

Biscuit baking has of late years become one of the most renowned of English industries; not that there

are so many firms employed in this branch, but that those which there are have facilities for turning out such large supplies of biscuits. The operatives are included under the head of bakers, so that there is no means specially of separating them; but when we know that Messrs. Huntley and Palmer employ over 2000 hands, and Messrs. Peek and Frean nearly as many, it gives us some idea of the magnitude of the trade, which has secured for itself a solid footing, not only in Great Britain, but over all the world, from Japan to the Cape of Good Hope. Machinery is a great feature in these large factories, and particularly in the matter of travelling ovens, worked by slowly moving rollers, so that the biscuits and cakes are placed at one end and delivered at the other, in about twenty minutes, ready baked. The manufacture of ship biscuits is another very important branch of the baking trade.

The following table is one of the imports of our corn, flour, and yeast:

QUANTITY.

Year.	Wheat.	Flour of Wheat.	Dried Yeast.
	cwts.	cwts.	cwts.
1866	23,156,329	4,972,280	114,064
1867	34,645,569	3,592,969	116,262
1868	32,639,768	3,093,022	116,133
1869	37,695,828	5,401,555	120,912
1870	30,901,229	4,803,909	128,641
1871	39,389,803	3,977,939	133,741
1872	42,127,726	4,388,136	140,191
1873	43,863,098	6,214,479	147,226
1874	41,527,638	6,236,044	153,811
1875	51,876,517	6,136,083	162,525

VALUE.

Year.	Wheat.	Flour of Wheat.	Dried Yeast.
	£	£	£
1866	12,983,090	3,796,911	234,426
1867	24,985,096	3,519,577	242,316
1868	22,069,353	2,832,077	231,719
1869	19,515,758	3,792,939	246,344
1870	16,264,027	3,383,751	286,097
1871	23,318,883	3,498,008	333,722
1872	26,169,185	4,087,639	347,689
1873	28,538,746	5,849,852	374,347
1874	25,236,932	5,685,076	396,074
1875	27,510,469	4,870,257	401,985

The United States send us by far the greatest quantity of corn, followed at a considerable interval by the northern and southern ports of Russia, Germany, and North America. Most of the wheat flour comes from the States and from France, and the yeast from Holland and Germany.

II. SALT.

The number of persons employed in working this very necessary article of food is stated at 2554 males and 141 females, of whom the greater portion are engaged in salt *making*—a very different kind of occupation to that of salt *mining*, and one which prevails partly in Cheshire (Winsford, Over, Northwich, &c.), and partly in Worcestershire (Droitwich and Stoke).

According to the report of Mr. Dickinson,* in

* 'Coal Mines Inspectors' Reports' for 1875.

whose district the Cheshire salt mines are situated (for it must be remembered that salt mines are placed for legislative purposes under the Metalliferous Mines Act), there are at present ten rock-salt mines in work at Northwich and one at Winsford, employing a total of 397 persons, of whom 333 were underground and 64 above ground. This is an increase on the numbers given by Mr. Manley in his article on Salt,* who gives a total of 286, viz. 266 underground, besides some 20 men called "ferryers," who assist when rock salt is being sent out. To a certain extent, salt mining is like all other mining, and liable to the same classes of accidents; but the salt strata are, as a rule, very free from carbonic acid, so that that dread visitant of coal mines, firedamp, is but rarely met with. Mr. Manley tells us "that the men look healthy; and as a proof of the usual purity and coolness of the air, butchers' meat will keep good in the mine for weeks even in the hottest time in summer."

Neither is salt making, or the evaporation of the salt from the brine springs, of an unhealthy character, though the appearance of the salt pans at Droitwich and Winsford is eminently disagreeable, they being usually shrouded in an atmosphere of dense steam. As the operatives work constantly in the midst of this and at a very high temperature, one would naturally suppose it to be unsanitary, but the fact is, that the salt acts as a sort of antiseptic, and preserves the workers from colds and rheumatism to a remarkable extent.

* 'British Manufacturing Industries.'

The ages of the salt workers are given in the Census tables as follows:

5–	10–	15–	20–	25–	35–	45–	55–	65–	75
1	64	250	322	644	533	383	236	96	25

while the mortality for 1871 is at the low rate of 37.

The *modus operandi* of salt making from brine is simple, and consists of pumping the latter from the pits into cisterns or reservoirs, from which it flows into the evaporating pans, the process being effected by heat from the boilers or from coal furnaces. It is during this evaporation that this dense steam is given off, so hot that the operatives work in an almost semi-nude condition. After the salt is ready, it is "drawn," or brought to the side of the pan with a rake, and then taken out to be dried and stoved. Women are not much employed in the salt making; and though some are still to be found at Droitwich, their labour is getting less and less in request. As regarding wages, Mr. Manley tells us that salt boilers are paid by the ton, and that a man in full work can earn 30*s*. to 35*s*. a week for making fine salt, after paying his assistants, who help him to draw, dry, and warehouse it. The salt maker is a contractor on a small scale, with whom the proprietor of the works deals, leaving him to find his own helpers. At present there are fifty firms in Cheshire using brine, two in Staffordshire (Weston-on-Trent), and two in Worcestershire, viz. the Droitwich

Salt Company, and Mr. Corbett, M.P., who has very large salt works at Stoke. The number of salt pans has been gradually increasing, viz.:

	No. of Pans.		No. of Pans.
1867	752	1872	1148
1868	805	1873	1169
1869	846	1874	1198
1870	1078	1875	1261
1871	1092	1876	1311

and according to the Mine Inspectors' Reports, the yield of rock salt in 1875 was 158,044 tons from Cheshire, and 33,075 tons from Ireland (Carrickfergus); total, 191,119 tons, irrespective of the white salt made from brine, which amounted to 1,779,000 tons.

The statistical returns of exports of salt for the decade are:

Year.	Quantity.	Value.
	tons.	£
1866	601,440	364,455
1867	724,343	445,941
1868	796,903	485,079
1869	833,187	430,592
1870	764,707	381,888
1871	893,201	467,596
1872	753,581	533,171
1873	840,939	789,054
1874	828,109	662,393
1875	917,514	676,556

Bengal and Burmah take the largest amounts from us, next to which are the United States, Russia, and North America.

III. Tobacco.

The trade in tobacco, cigar, and snuff making, is a large and increasing one, showing at all events that the efforts of the anti-nicotians to raise a "counterblast" have up to the present time failed.

The numbers engaged in 1871 in this manufacture (as also the sale of tobacco) were:

	Males.	Females.	Total.
England	10,115	4,252	14,367
Scotland	1,337	427	1,764
Ireland	1,374	96	1,470
Total	12,826	4,775	17,601

The ages of the males were:

5–	10–	15–	20–	25–	35–	45–	55–	65–	75
6	669	1607	1388	2498	1890	1234	554	217	52

showing a fair proportion of juvenile labour.

The Factory Returns of course do not include tobacconists:

	No. of Factories.	Children under 13.	Males up to 18.	Above 18.	Females.	Total.
England ..	263	231	1,977	3,724	3,270	9,202
Scotland ..	86	343	667	483	411	1,904
Ireland ..	79	18	977	645	16	1,656
Total ..	428	592	3,621	4,852	3,697	12,762

Tobacco manufacturers are tolerably equally scattered over the kingdom, and are to be found in most of our large cities, especially London, Liverpool, Birmingham, Manchester, Leeds, Glasgow and Belfast; and the use of machinery has very considerably increased of late years, as Mr. Dunning has shown us in his article on Tobacco.* The processes which the leaf has to undergo when it arrives at the manufactory are, (1) moistening or damping, so as to render the leaf pliable; (2) stripping and sorting, a work generally done by girls and women, and involving a certain amount of skilled labour and dexterity; (3) cutting and pressing, usually performed by machinery, which turns out some 200 lbs. of fine "shag" in a single hour; (4) spinning the leaf into "roll," "twist," or "pigtail," which is sometimes done by hand, but of late years, in large manufactories, by machinery. In point of fact, tobacco is spun just like any other textile; but in point of detail, the machinery differs from other spinning machines "by a differential traverse movement, the object of which is to lay on the coils at a rate always governed by their own thickness. Of the two moving parts—the twisting apparatus and the coiling apparatus—one is always turning more rapidly than the other; and the difference between them cannot be uniform, because of the increasing diameter of the bobbin as it fills, and also because of the slight but unavoidable variation in the thickness of the rope made."—*Dunning.* In cigar making, women and girls have been employed only recently, and the labour is one that demands a good deal of manual experience. Till

* 'British Manufacturing Industries.'

within the last five or six years, the class of juvenile workers in tobacco factories were of the very lowest order, it being the custom of the trade for the boys to be employed and hired immediately by the journeymen, who received a certain rate per pound for the manufactured tobacco, each journeyman finding three boys, who were paid by him and were under his control. It was therefore the interest of the workmen to secure boys at the lowest wage, regardless of character; and so bad was the latter, that in some establishments the boys were regularly searched on leaving the factory.* Although the introduction of machinery, and, let me add, the care taken by the employers to endeavour to raise the status of their workpeople, have very much improved the order of things, tobacco spinners are, as a rule, not a high class of workers; and those of Dublin are described by Dr. Monks (Factory Report, 1875), as "pale and sickly of aspect, constant smokers or chewers of tobacco, which affects their growth, their physique, and their general health, added to which, their poverty and habits assist in their deterioration." There can be no doubt that, even under the most favourable circumstances, the cigar manufacture is not a healthy one. In the course of drying, the dust and vapour cause oppression of the breathing and dryness of throat, with sometimes giddiness and nausea. These symptoms, according to Dr. Richardson,† are increased very considerably in snuff making, in which the tobacco leaf is mixed with lime water, salt, floor-dust sweepings occasionally, and also red-

* Factory Report, 1870.

† 'Journal of Society of Arts,' January 1876.

lead. "Sifting the 'shorts' is more hurtful than rolling the cigar. The consolation of the workman is, that he becomes accustomed to the poison if he only keeps to the work, and at last gets over the symptoms, though the tolerance of the system, however, is partial only. Those workmen who are disposed to pulmonary consumption suffer readily from the disease; and in others, of better constitution, less serious, but still serious derangements are manifested, the most common of which are a persistent dyspepsia, and that pale and bloodless condition to which the term *anæmia* is applied by the physician. Few workmen escape altogether these dangers, and not many are able to carry on their business beyond the fortieth year." The Returns of the Registrar-General for 1871 show the total deaths to be 76, viz.:

5–	10–	15–	20–	25–	35–	45–	55–	65–	75
..	1	5	15	17	13	9	7	7	2

And it is added, "The tobacconists, snuff and tobacco makers, suffer very much at all the younger ages, indicating clearly enough how prejudicial smoking is to young men." As compared with all classes, the mortality per cent. is:

	15–	20–	25–	35–	45–	55–	65–	75
Tobacco ..	·278	1·251	1·222	1·456	1·566	3·423	5·780	18·421
All classes ..	·632	·859	·985	1·305	1·853	3·215	6·676	16·584

The average weekly earnings of tobacco operatives were, in 1871:

Cutters	25*s.* to 35*s.*
Dryers or pan-men	18*s.* „ 30*s.*
Strippers (women)	12*s.* „ 24*s.*
„ (boys)	7*s.* „ 20*s.*
Spinners	25*s.* „ 35*s.*
Packers	15*s.* „ 25*s.*
Machine boys	5*s.* „ 18*s.*
Cigar makers (best hands) ..	30*s.* „ 40*s.*
Sorters	25*s.* „ 30*s.*
Snuff makers and sifters	21*s.* „ 25*s.*
Girls at machines	8*s.*
Boys at presses	4*s.* „ 5*s.*

Mr. Dunning tells us that the best cigar makers (men) can earn 60*s.* per week, but that the average is 25*s.*; for women, 20*s.*; and for skilful cigar girls, 25*s.* 6*d.*, though the average is but 15*s.* Young girls beginning at 2*s.* will reach 7*s.* before the end of their first year, and 10*s.* or 12*s.* before they are out of their apprenticeship. Tobacco cutters and snuff makers earn from 28*s.* to 30*s.*, and a skilful spinner, occasionally from 50*s.* to 60*s.*, though this is rare. Cigar makers are earning (1876) from 40*s.* to 50*s.* weekly.

The following are the statistics of imports:

MANUFACTURED TOBACCO.

Year.	Quantity.	Value.
	lbs.	£
1866	3,171,907	538,695
1867	3,798,995	539,370
1868	3,051,399	558,735
1869	2,472,011	411,130
1870	3,235,215	488,913
1871	3,852,237	862,236
1872	3,667,585	1,145,150
1873	3,834,199	1,283,538
1874	4,632,581	1,326,001
1875	3,344,607	1,191,607

UNMANUFACTURED TOBACCO.

Year.	Quantity.	Value.
	lbs.	£
1866	54,374,797	2,101,351
1867	57,586,287	1,841,942
1868	49,016,586	1,743,287
1869	52,588,590	1,854,220
1870	45,557,887	1,680,140
1871	73,060,305	2,462,670
1872	45,549,700	1,563,882
1873	81,382,733	2,618,799
1874	76,175,215	2,647,618
1875	48,943,559	1,759,967

The United States send us most of our raw tobacco, and, next to them, Holland and the Philippine Islands. Of the various kinds of manufactured tobacco imported in 1875 were :

Snuff	8,397 lbs.
Cigars	1,583,902 „
Cavendish	1,681,598 „
Cigarettes	70,710 „

Duty is payable as follows :

	Per lb. s.	d.
On unmanufactured, containing 101 lbs. or more of moisture in every 100 lbs.	3	$1\frac{8}{10}$
When the moisture is less than 10 lbs. ..	3	6
On snuff, with more than 13 lbs. of moisture	3	9
On snuff, with not more than 13 lbs. of moisture	4	6
On cigars	5	0
On cavendish, of foreign manufacture ..	4	6
On cavendish, manufactured in bond ..	4	0
On cigarettes	4	0

IV. Brewing and Distilling.

The brewing interest is one of the utmost importance to the country, not so much on account of the numbers engaged in it, as the enormous amount of capital invested; and when we come to associate with it, that of the licensed victuallers, it is easy to understand what an influence the two together are capable of exerting.

The numbers employed in malting and brewing were, according to the Census tables:

	Maltsters.	Brewers.	Total.
England	10,274	25,562	35,836
Scotland	845	1,306	2,151
Ireland	685	640	1,325
Total	11,804	27,508	39,312

Breweries are universal institutions, found in almost every town of any size in the kingdom, although some localities have attracted them more than others. London, of course, has its old-established breweries, the names of which are as household words; such as Truman, Hanbury, and Buxton; Barclay and Perkins; Meux; Charrington, Head, and Co.; Whitbread; and many others, only one degree less known; but it is not so easy to understand why Burton-on-Trent, the metropolis of bitter beer, should have become the celebrated place that it is—the true pale ale factory town for all the world. In Kent, again, the centre

of the hop district, we naturally find more breweries than in any other county in England; while Nottinghamshire has obtained a notoriety for the number and size of its malting establishments. Mr. Pooley has given in detail, in his article on Brewing,* the numerous stages, through which we finally obtain our glass of ale, such as grinding the malt, mashing, boiling, cooling, fermenting, cleansing, racking off, and clearing; the grain previously having passed through the maltster's hands, in the operations of steeping, couching, flooring, and kiln-drying. The principal features of our modern breweries appear to be, the gigantic scale on which they are conducted; for instance, at Messrs. Truman's there are six mash-tuns, with a total capacity of 700 quarters; while the storage statistics of brewers like those of Allsopp or Bass read like the victualling of a beleaguered city. When we take into consideration the large number of brewers that exist in every large town and the immense number of hands employed in most of our best known breweries, it is difficult not to believe that the Census tables have not underrated them. On this point Mr. Pooley says, "Presuming that one man is able to malt 30 bushels per day, there must be about 12,000 men engaged in the manufacture of malt. In the cultivation of the barley, taking one man to 35 acres, there are employed about 70,000 men. In the cultivation of hops, taking one man to 5 acres, there are employed about 12,000 men. In brewing, assuming that one man is required for every 500 bushels brewed, there must be employed about 135,000 men. There are 144,425 dealers and

* 'British Manufacturing Industries.'

retailers of beer in the United Kingdom, many of them employing several hands. So that, taking into consideration all the accessory trades in connection with breweries, including engineers, coopers, &c., there cannot be far short of half a million hands employed in this important industry, and the capital invested must reach the almost fabulous sum of 200 million pounds. The brewing and malting trades yield to the state for duty, licenses, &c., a revenue of about 10 millions."

As regarding those who work in malting houses or breweries there is very little to say, the sanitary conditions of the trade being generally excellent. Indeed, the whole physique of a brewer's man testifies to the healthiness of the surroundings. The mortality, however, is somewhat high about the middle periods of life, viz.:

	Total 1871.	5–	10–	15–	20–	25–	35–	45–	55–	65–	75
Maltsters ..	237	..	..	3	3	21	18	24	46	54	68
Brewers ..	725	..	..	7	34	128	155	107	138	107	49

This satisfactory hygienic state of the brewing does not extend, unfortunately, to those who are engaged in purveying beer for the public, for they die quicker, and suffer from fatal diseases more than any other body of men, a fact which is attributed by the Registrar-General to the constant sipping of wine or beer at frequent intervals without food. Indeed, the deaths of publicans, as compared with other classes, are most marked,* viz.:

* Supplement to Thirty-fifth Annual Report, 1875.

Ages.	Males.	Publicans.
15–25	·727	1·003
25–35	·972	1·407
35–45	1·281	1·981
45–55	1·812	2·797
55–65	·3·154	4·228
65–75	6·489	7·088
75, &c.	16·288	21·034

The statistics of the brewing trade are too voluminous for me to produce in all their fullness, and I can only add some of the most important:

Year.	Acreage of Barley.	Imports.	Value.
	acres.	cwts.	£
1867	2,440,242	5,684,956	2,833,563
1868	2,348,068	7,476,490	3,799,752
1869	2,483,277	8,053,769	3,379,877
1870	2,623,752	7,217,869	2,831,885
1871	2,616,965	8,569,012	3,399,598
1872	2,543,581	15,046,566	6,194,096
1873	2,574,529	9,241,063	4,013,572
1874	2,507,130	11,335,396	5,291,287
1875	2,751,362	11,049,476	4,635,644

The acreage and imports of hops were:

Year.	Acres.	Imports.	Value.
		cwts.	£
1867	64,284	296,117	1,626,941
1868	64,488	231,720	689,383
1869	61,792	322,515	1,098,475
1870	60,597	127,853	428,525
1871	60,033	218,664	895,895
1872	61,927	135,965	679,276
1873	63,278	122,729	602,941
1874	65,806	145,994	929,041
1875	69,172	256,444	1,188,054

The quantities of bushels of malt (*a*) charged with excise duties, (*b*) free of duty (for feeding cattle), and (*c*) retained for home consumption, were:

Year.	*a.*	*b.*	*c.*
1867	47,891,818	4,221,700	50,440,717
1868	49,703,931	4,633,895	52,669,089
1869	49,400,262	4,967,665	52,568,339
1870	53,175,482	5,510,896	56,775,614
1871	50,724,097	5,184,001	54,160,917
1872	57,308,082	6,082,284	61,608,569
1873	59,194,089	6,256,833	63,496,785
1874	58,728,687	6,042,199	62,817,295
1875	58,139,535	6,617,833	63,015,676

Finally, of beer and ale we exported:

Year.	Quantity.	Value.
	barrels.	£
1867	518,838	1,910,850
1868	496,646	1,869,183
1869	495,110	1,892,766
1870	521,199	1,881,673
1871	483,120.	1,853,733
1872	522,080	2,085,430
1873	584,939	2,422,020
1874	559,413	2,449,035
1875	504,511	2,094,672

V. Sugar.

When we talk of sugar as a British industry, we mean simply the refining of that article, whether it be cane-sugar from the West Indies, or beet from France and Germany. Liverpool, London, Bristol, Glasgow, and Greenock, are the chief seats of this trade, which employed, according to the Census,

	Total.	Under 20.	Above 20.
England	2781	234	2547
Scotland	950	118	832
Total	3731	352	3379

The Factory Returns give a considerable increase on these numbers, viz.:

	No. of Factories.	Males up to 18.	Above 18.	Females.	Total.
England ..	30	106	3152	27	3285
Scotland ..	13	197	1568	..	1765
Ireland ..	1	4	120	..	124
Total ..	44	307	4840	27	5174

The kind of labour required in sugar refining is one of skill and experience. The processes, as described by Mr. Haughton Gill in his article,* consist of, 1. Dissolving and boiling (technically called "blowing up"); 2. Filtering through cotton bags; 3. Decolorizing by animal charcoal in "char" cisterns; 4. Boiling in a vacuum pan, so as to secure concentration and form crystals; 5. Separating the crystals from the mother liquor; 6. Draining and drying the "titlers" or loaves in store-rooms. The product of the first crystallization is known as "lumps," and the subsequent ones as "pieces." Both "bastards" and "pieces" are moist sugars of very low crystallization, and contain a considerable quantity of grape-sugar and moisture. It is, however, very much the fashion with grocers to deceive the public into

* 'British Manufacturing Industries.'

buying "pieces" instead of raw sugar, which is an undoubted imposition, as "pieces" not only contain iron and other impurities, but their sweetening power is only about two-fifths of that of cane. Women and boys are employed in sugar refining to a very small extent; the latter principally as "liquor" boys, who stand at the taps to let out the liquid sugar into cans, while others work in the mixing room, or in handing the titlers to the men for the purpose of drying them.

The imports of raw sugars in cwts. are as follows:

Year.	Quantity.	Value.
	cwts.	£
1866	10,639,085	10,795,015
1867	10,545,315	11,501,961
1868	11,796,161	13,339,758
1869	11,033,653	13,540,917
1870	12,798,631	14,440,502
1871	12,126,508	15,220,474
1872	13,776,696	18,044,898
1873	14,243,328	17,066,026
1874	14,130,041	15,837,617
1875	16,264,711	17,210,107

But the exports of refined sugar are comparatively small, though steadily progressing:

Year.	Quantity.	Value.
	cwts.	£
1866	195,951	294,463
1867	172,650	266,191
1868	269,017	465,855
1869	304,198	549,761
1870	579,253	934,110
1871	778,435	1,239,702
1872	632,341	1,014,256
1873	696,784	1,045,751
1874	922,342	1,221,891
1875	972,263	1,149,379

VI. Preserved Provisions.

It is impossible to state from official sources, how many persons are engaged in this comparatively modern industry. The Census at all events does not take note of it as a special occupation, but groups provision curers with provision dealers. The Factory Returns, however, do make a special mention of preserved meat, fruit, and fish preparers, and give the following list:

	No. of Factories.	Males up to 18.	Above 18.	Females.	Total.
England ..	10	96	623	916	1635
Scotland ..	6	19	220	509	748
Ireland ..	8	80	624	60	765
Total ..	24	195	1467	1485	3148

At the present time, it may fairly be assumed that between 4000 and 5000 are employed, as the industry is a decidedly progressive one. Food-preserving firms are but few, but they are all more or less well known in their several vocations, such as Messrs. Moir, Morton, Hogarth, of Aberdeen, and Messrs. Gillon, of Leith, for meat, soups, and fish; Messrs. Crosse and Blackwell, for soups and jams; Messrs. Keiller, of Dundee, for marmalade; the Aylesbury and the Anglo-Swiss Companies for milk, cocoa, and coffee, &c. These names are household words with those who have to manage the domestic cuisine, while others again are simply agents for colonial supplies, the manufacture of which is not carried on in this country. Mr. Manley has

described, in his article on the Preservation of Food,* the various patents and processes which have from time to time been taken out in this direction, and with more or less success. There is no doubt, but that there is ample room for extension of this trade, which, as regards the operatives, is clean, healthy, and pleasant, and one that particularly marks itself out as a source of occupation for women. At the present time (1856) the earnings of men are about 30*s.*, and of women from 10*s.* to 13*s.* The amount of preserved meat which finds its way into this country from foreign and colonial sources, is rapidly increasing, viz:

Years.	Quantity.	Value.
	cwts.	£
1866	2,318	8,122
1867	15,339	51,662
1868	20,118	58,629
1869	32,214	94,260
1870	80,636	231,860
1871	254,833	662,280
1872	350,729	945,819
1873	260,749	733,331
1874	265,223	757,001
1875	171,373	592,196

It will be observed that the fluctuations in the supplies are rather marked. This does not arise, however, from a decline in the demand for preserved meat, but rather from commercial and financial disturbances in Australia, or wherever the meat may be prepared.

* 'British Manufacturing Industries.'

VII. Fish Curing.

Viewed as a contribution to our national supplies of food, our fisheries are of the greatest interest, and are also of importance, as furnishing occupation to a considerable body of people, viz.:

	Males.	Females.	Total.
England	20,679	364	20,943
Scotland	26,267	1,029	27,296
Ireland	9,438	108	9,546
Total	56,384	1,501	57,785

It is not, however, with fishermen that I shall deal in this present section, partly because they do not come exactly within the category of our manufacturing population, and partly because our fisheries will form the subject of description on another occasion. There is, however, a department of this branch of industry upon which I may fairly touch, viz. the employment of men and women (but principally the latter) in fish curing at the several ports, on the arrival of the fishing fleets. The occupation is one which is known to the Factory authorities as a season trade, viz. one which is fitful and irregular in its times and seasons, and in which the necessities of the case produce alternations of great pressure with spells of idleness. Fish curing is carried on at all our principal fishing ports, but chiefly on the East coast and in Cornwall; Yarmouth, Lowestoft, Leith, Wick, Mevagissey, Kinsale, and sea-port places such as these, being the head-quarters of

the trade, which depends for its busy times on the nature of the fishery, whether it be for pilchards, mackerel, or herrings. The North Sea fishing is most brisk in January, February, and March; that for mackerel is in July, August, and September; while herrings are most prevalent on the East coast in October, November, and December. It is the latter fish which furnishes the most employment for the curers, for whose benefit large curing houses have been built, and are open for about eleven weeks during the last quarter of the year. The magnitude of the trade may be gathered from a statement made by a Factory Sub-Inspector,* that in one week alone twenty-four million herrings were sometimes landed at Lowestoft Pier. But the herring fishery is very variable, as the following statistics of Scotch fisheries will show:

Year.	No. of Boats Employed.	Catch.
		crans.
1872	5,516	569,888
1873	5,361	715,047
1874	5,740	723,433
1875	5,463	652,962
1876	5,259	409,383

In the Irish fisheries there has been a marked decline, 3816 more men and boys having been employed in 1874 than in 1875.

An enormous number of fresh herrings are sent

* Factory Reports, 1874.

over the country by railway immediately on landing; but the industry of the women is principally concentrated on the "kippers," their duties being to split the fish open, gut them, put them into tanks of brine for a quarter of an hour, and hang them up for the night in the smoking room. It being necessary that the whole process up to the hanging be completed within the hour, it is easy to imagine the confusion and the prodigious clatter of tongues, that arises as soon as the cargo is landed; and although the scene is eminently picturesque and busy, it cannot be said that the employment is one particularly suited to feminine associations. The fish that cannot be brought to shore on the same day as that on which they are caught, are partially salted in the boats, and become "bloaters," these not being gutted or salted on shore, but only hung up for the night in the smoking room. In the case of the pilchard fishery at St. Ives or Mevagissey, the treatment of the fish is different, for as soon as they are brought on shore, they are taken into cellars and built up like a wall, with alternate layers of salt. This process is called "bulking," and while it lasts, employs pretty nearly every available hand in the place, including numbers of children, who get paid at the rate of threepence an hour. The fish are next packed in hogsheads, with a large heavy stone at the top to assist in extracting the oil, and after this process the pilchards, now called "firmaids" or "farmaids," are exported to Italy and the Mediterranean.

Notwithstanding the dirt and mess which is neces-

sarily found in herring-curing establishments, the women are usually noted for their robust, animal health, and, perhaps not unnaturally, for their somewhat free and unrestrained manners. As far as the first stage of gutting and salting goes, the trade is under no restriction of the law, it being felt that it was useless to tie down an occupation, which depends so completely on the weather and the waves; but the subsequent operations of smoking, drying, turning, &c., come under the ken of the Factory and Workshops Act, subject to certain modifications, which allow of overtime between 6 A.M. and 8 P.M., or 7 A.M. and 9 P.M., or 8 A.M. and 10 P.M. respectively, for ninety-six days in the year, between June 1 and December 24.

To sum up the exports of all our British food supplies for the ten years, would take up too much space, but it may interest my readers to give the table for one year (1875):

Food.	Quantity.	Value.	Principal Customers.
	cwts.	£	
Biscuit and Bread	127,764	368,698	Holland, France.
Butter	39,266	240,281	Portugal, Azores.
Cheese	21,332	88,232	S. Africa, Australia.
Salmon	5,586	35,218	France.
Cod and Ling ..	37,350	46,190	Spain, Canaries.
	barrels.		
Herrings	684,755	956,620	Germany.
	bushels.		
Oysters	14,204	53,834	France, Belgium.
	hhds.		
Pilchards	9,567	33,240	Italy.
Pickles	..	631,032	Australia, United States, India.

CHAPTER XI.

SUNDRY INDUSTRIES.

I. Chimney Sweeps.

The reason why I have included this branch of work-people, who certainly do not come within the scope of manufacturing industries, is, because chimney sweeps form a class to which, from the nature of the occupation and the inhumanities committed in it, public attention has frequently been drawn, resulting in some useful and much-needed legislation. It is singular, that the Census takes no cognizance of chimney sweeps, so that it is impossible to ascertain how many there are following the trade; but, according to the Post Office Directory, there are upwards of 140 in the metropolis. The miserable condition of chimney sweepers' climbing boys, to whom indeed the masters seemed to have always had a prescriptive right, long attracted the attention of Parliament; and an Act was passed in 1788 (28 Geo. III. c. 48) for the better regulation of chimney sweepers. This was succeeded by another in 1834 (4 & 5 Wm. IV. c. 35), which forbad any child under ten to be apprenticed; also the letting out of boys for hire (as was then the custom), or the sending them up any flue. It was ordered also, that no unwilling boys should be bound to the trade. In 1840 (3 & 4 Vic. c. 85) another Act was passed, limiting

the age of apprenticeship to sixteen, and forbidding anyone under twenty-one years to ascend a chimney. Attention was also directed to the faulty construction of chimneys, a clause providing, that no chimneys should be built except of a certain size and angle. But with all this, either the laws were inoperative or they were not universally enforced, and the condition of the climbing boys was in many towns as shocking as ever. In some localities, such as Birmingham, associations were set on foot to prevent the employment of them in this way, by prosecuting their masters and obtaining convictions against them. But even where such associations existed, great difficulties were constantly met with, owing to the apathy of the public, and the unaccountable dislike of magistrates to convict the offender; the fact being, that people in general were wedded to the old order of things, and that the introduction of the sweeping machine frequently entailed some trifling alteration in the chimney, before it could be used with advantage. An inquiry was ordered into the subject in 1862, and carried out by the Children's Employment Commission, when a terrible state of things was revealed; and this led to the passing of the Chimney Sweepers Regulation Act of 1864 (26 & 27 Vic. c. 37), which provided that no child under ten years of age was to be employed in the trade under any circumstances, nor could a master sweep bring with him any person under the age of sixteen to the house, where the chimney was being swept. A considerable improvement then took place in public opinion, and this, together with the gradual increase in the use of the *ramoneur*, was the means of

great amelioration in the circumstances of the chimney sweepers' boys. In 1875, still more stringent regulations were laid down, through the efforts of the Earl of Shaftesbury, in the Chimney Sweepers Amendment Act (38 & 39 Vic. c. 70), which required every sweep to be registered and obtain a certificate, before he could follow his trade; by which means, a certain supervision is now enabled to be kept over the great body of sweeps.

The accounts given of the treatment of the poor lads during their training, or indeed during their whole subsequent life, until they themselves became master sweeps, were almost incredible. The following is an extract of the evidence of a master sweep at Nottingham, which was a notorious town for the employment of climbing boys: "No one knows the cruelty which a boy has to undergo in learning. The flesh must be hardened, and this is done by rubbing it, chiefly on the elbows and knees, with the strongest brine, close by a hot fire. You must stand over them with a cane, or coax them by the promise of a halfpenny, if they will stand a few more rubs. At first they will come back from their work with their arms and knees streaming with blood, and the knees looking as if the caps had been pulled off. Then they must be rubbed with brine again, and perhaps go off to another chimney. In some boys the flesh does not harden for years." Another sweep at Manchester, who had gone through all this, testified as to their habits. "We slept four or six boys together in a sort of cellar, with the soot bags over us, sometimes sticking in the wounds; that and some straw were all our bed and bed-clothes: they

were the same bags that we used in the day, wet or dry. I could read, and we sometimes used to subscribe for a candle to read by, when we were in bed. I have seen the steam from our bodies so thick as to obscure the light, so that I could not see to read at all. Dozens die of consumption: they get up about their work in all weathers, and often at 2 and 3 A.M. They are filthy in their habits; lads often wear one shirt right on till it is done with. I have been for fifteen months without being washed, except by the rain. I know a man's son in Salford at this present moment, who has never washed since he has been a sweep." Not only were these habits, known in the trade as "sleeping black," filthy in the extreme, but the continual presence of the soot next the skin often induced a fatal form of cancer, well known to medical men. Nor was this the only physical risk that the climbing boy ran, for it not unfrequently happened, that he stuck in some narrow bend of the chimney, and was either smothered or burnt. A Mr. Wood, who lived near Manchester, and had devoted much of his life to endeavouring to improve the condition of these lads, mentioned a case at Ashton, where the boys had to sweep out a hot boiler flue, and at first refused to go in; but being plied with beer and threatened alternately, they did so, and came out in a quarter of an hour horribly burnt. When we reflect that these things could have happened in a Christian country not fifteen years ago, it is difficult to understand the amazing apathy and callousness exhibited by persons, who otherwise were doubtless charitable enough. It is not so many years since, that a lady, objecting to the use of the sweeping machine,

inquired why she could not have the climbing boy as usual; and on being told that he was gone to school, said, "A chimney sweep, indeed, wanting education! What next?"

No section of the industrial classes could surely have required so much a help as this; and it is gratifying to think that climbing boys are no longer the little black pariahs that they used to be, and that the law is now really strong enough to protect them from cruel treatment and neglect. Two of our great novelists, Charles Dickens and Charles Kingsley, have both held up a sweep to execration, in the shape of Mr. Gamfield in 'Oliver Twist,' and Mr. Grimes in the 'Water-Babies'; but we would fain hope that the cruel breed is fast disappearing.

II. Canal Boatmen.

The number of those engaged, as what the Census tables call "carriers on canals and rivers," is very considerable, viz.:

	Inland Navigation Service.	Bargemen or Watermen.	Total.
England	3,128	29,487	32,615
Scotland	502	601	1,103
Ireland	347	774	1,121
Total	3,977	30,862	34,839

The reason why I allude to this branch of industry is, because a large share of public attention has of late been directed to it, with a view of putting a stop to the

evils, moral and physical, under which the canal population labour. At present, as far as England is concerned, the canal boats are the homes, not only of the men who work them, but also of their wives and families, a condition of things which is attended with overcrowding, considerable immorality, and ignorance, constituting a strong element of danger, in a sanitary point of view, to the large centres of population, between which this amphibious section of society is constantly plying.

Mr. George Smith, of Coalville, in Leicestershire, whose name is honourably associated in connection with the question of juvenile labour in brick-fields, and Captain May, of the Factories Department, were the two first to direct public attention to the canal population; the former calculating, that on all the rivers and canals in the kingdom there are not less than 22,400 women, as many men, and 72,000 children, floating up and down. He also estimates (though roughly) that there are as many as 13,000 women living in an unmarried state, and 40,000 illegitimate children. Captain May adds his testimony as follows: "The cabin of a canal boat is about 8½ feet long, 5 feet high, and 6 feet 3½ inches at its broadest part. Within this space are frequently crowded at night, a man and his wife, and six children. I have known a case, in which it was made to contain nine children, besides the parents. In one of the North Staffordshire Railway Company's boats, there were six children of the following ages: males, 11, 6, and 1½ years; females, 16, 13, and 8 years. No argument is required to prove the gross

impropriety of such a state of things, the only wonder being, that so many human beings can be stowed away in so small a place, which contains, moreover, the cooking and domestic utensils, clothes, and provisions; in fact, all the worldly goods of the family." * The evils, which are thus strongly spoken of, appear to be more common on some canals than others, such as the Grand Junction and the North Staffordshire, and perhaps the northern canals generally. On the Irish canals, for instance, none but men are allowed in the boats, and this is very much the case with some of the southern English canals, such as the Kennet Navigation. It should, however, be mentioned, that some people hold that, apart from the overcrowding, it is better for the interests of morality that the wives should accompany the husbands. For instance, in the Factory and Workshops Commission of 1875, the Vicar of Goole, in Yorkshire, gave evidence to the effect, that he thought the interference of Parliament would be bad, inasmuch as if the wives were compelled to stay at home, more demoralization would be the consequence.

The boats vary in character, according to the canal on which they ply. On the Bridgewater Navigation, there are two classes, the broad and narrow, which last are again subdivided into fly boats and slow boats. The fly boats run periodically, and are managed by three men; the slow boats by two men, or a man and his wife. These narrow ones travel principally on the Trent and Mersey Canal, between Runcorn and the Potteries; and the broad ones, on the Bridgewater

* Factory Reports, 1874.

Canal, to Manchester. The earnings of a narrow slow boat, shared by two men, would be about 40*s.* to 43*s.* per week; and for the broad boats, about 32*s.* per week for the captain, and 27*s.* for the hands. On the southern canals, wages are not so high, varying from 17*s.* to 25*s.* The question, how far it is possible to bring the juvenile population within the supervision of the Factory Acts, and so of the education machinery of the country, is a difficult one, on account of the migratory character of the parents; but it is the opinion of the inspectors of factories, and others, that the balance lies decidedly in favour of the compulsory forbidding the employment on board the barges of young women or boys under fourteen years of age; and that the difficulties of working such an arrangement would not be nearly so great in practice, as they appear in theory.

III. Railway Servants.

Although not engaged in manufacturing industries, this large body of men is so essential to the working and development of our commercial system, that it would not be right to omit all mention of them.

From the Census Returns, we find their numbers computed at (1871):

	Engine Drivers and Stokers.	Officers, Clerks, Station Masters.	Railway Attendant Servants.	Total.
England ..	13,715	22,083	48,827	84,625
Scotland ..	2,157	3,452	6,164	11,773
Ireland ..	1,079	1,523	3,791	6,393
Total ..	17,351	27,058	58,782	102,791

All of these three branches of railway labour have, of course, different responsibilities and different risks, of which the engine drivers run the most. Indeed, it is marvellous to see how few accidents are met with, comparatively speaking, by this class, who, as a rule, are picked men, of considerable experience, courage, and steadiness. No traveller—and in these days all are travellers—can ever think too highly of the engine drivers, who in fair weather and foul, by day or by night, through snow, rain, and storm, are ever at their posts, and have shown examples of bravery, care, and presence of mind, which have, in the hour of emergency, saved many thousands of lives. The same may be said of the great body of our railway guards, who, though they run less personal risk, are always to the fore in time of danger, and in the great majority of cases, are civil, helpful servants, real "travellers' friends." Apart from the risk of accident to which railway servants of all kinds are more or less exposed, the greatest evil of their calling appears to be the long and somewhat arbitrary hours of over-work to which they are subject, generally from motives of economy, at the hands of the managers. Economy, of course, is a vital necessity in railway supervision, but it is often carried on in the wrong place ; and many a life has been lost, both of traveller and servant, and many a thousand pounds sacrificed in repairs and in compensation, from the pardonable default of a sleepy driver or an overworked pointsman. When we come to think of the tremendous responsibility that lies upon the officials of a railway, it certainly seems that those

upon whom the most devolves, should not be treated in the same hard and fast spirit as the ordinary labourer. The only statistic which I can append to this section of our industrial body, is a table showing the injuries to which they are subject. The list is only for three months of the present year (1876), but forms a sufficient average to calculate the annual loss of life and injury:

	Killed.	Injured.
1. During shunting operations	23	139
2. Falling off engines, vans, and waggons	10	61
3. Coming in contact with overbridges during train travelling	1	12
4. Coming in contact, while shunting, with other vehicles	..	13
5. Getting on or off trains or engines ..	7	68
6. Loading, unloading, or sheeting	5	171
7. Braking, spragging, or chocking wheels	..	34
8. Working at cranes or capstans	1	43
9. Working on the permanent way	31	49
10. Walking home along the line	4	3
11. Crossing or standing on the line	55	59
12. Passing between vehicles	7	24
13. Cleaning engines	2	34
14. Attending to gates at level crossings ..	..	..
15. Falling between vehicles or platforms	7	16
16. Falling off ladders or platforms	1	60
17. Falling off lamps, waggons, &c.	..	82
18. Coupling or uncoupling waggons ..	13	102
19. Miscellaneous	2	88
Total	169	1058

or at the rate of 680 deaths and 4200 accidents per annum. The Registrar-General's returns of mortality for the year 1871 were as follows:

	Under 20.	Above 20.	Total.
Railway driver or stoker	13	212	225
Officer, clerk, or station master	22	262	284
Attendant or servant	52	739	791
Total	87	1213	1300

CHAPTER XII.

WORKING-CLASS FEDERATION.

I OUGHT not to close my account, however brief and imperfect, of the condition of the working classes of Great Britain, without showing my readers one of the most important phases in the industrial economy of the age, viz. that of federation or banding together for purposes tending, or supposed to be tending, to their self-interest. These federations may be principally divided into three heads: 1. Trades Unions; 2. Friendly Societies; 3. Co-operative Societies. There can be, one would imagine, but one expression of opinion as to the utility and excellence of the two last of these; the first may have been rendered necessary by the course of events, but it is, at the most, a doubtful blessing.

The earliest legislation bearing upon the question of combination is that of 1726 (12 Geo. I. c. 34), when an Act was passed to prevent unlawful combination of workmen in the woollen manufactures, which was succeeded by a more general Act of 1825 (6 Geo. IV. c. 63), the Combination of Workmen Amendment Act; another of the same name, in 1859 (22 & 23 Vic. c. 34); the Trades Unions Funds' Protection Act of 1869 (32 & 33 Vic.), the Trades Union Amendment Act of 1871 (34 & 35 Vic. c. 31), and the Trade

Union Amendment Act of 1876 (39 & 40 Vic. c. 22). By the Act of 1871 union is made legal, by declaring that members would not render themselves liable to criminal prosecution for conspiracy by combining together. "Trades Union," as defined by this Act, is a combination, whether temporary or permanent, for regulating the relations between workmen and masters, or between workmen and workmen, or between masters and masters, or for imposing restrictive conditions for the conduct of any trade or business as would, if this Act had not been framed, have been deemed an unlawful combination, by reason of some one or more of its purposes being in restraint of trade.

The oldest Trades Union which figures in the official list of the Registrar of Friendly Societies is that of the United Order of Smiths, Engineers, and Machinists, London, which dates from 1823; but of the 194 of which particulars are given in the Report of 1875, 173 were registered after the passing of the Act of 1871. By briefly analyzing the list, we find the combinations of the several trades as follows:

	No. of Members.
Textiles, viz. Warehousemen, stuff makers, machine wool-comb makers, pattern card-makers, trimming weavers, carpet weavers, woollen weavers, silk dressers, cotton spinners, power-loom weavers, flax dressers, mill machinists	27,865
Building, viz. Bricklayers, plasterers, stone carvers, stone masons, carpenters and joiners	72,143
Engineering, viz. Boiler makers, iron ship-builders, engineers, pattern and mould makers, steam and stationary engine makers, and stokers	71,048
Iron, viz. Iron and steel works, foundry-men, tin-plate workers, blast furnace men	35,664

	No. of Members.
Colliers and Miners	215,925
Agricultural Labourers	99,576
Travelling, viz. Railway servants, cab-drivers, watermen	22,123
Clothing, viz. Tailors, bootmakers	26,647
Painting, viz. House and ship-painters	8,015
Printing, viz. Printers, bookbinders	12,714
Food, viz. Tobacco makers, bakers, licensed victuallers, &c.	5,386
Brass Workers	7,241
Cutlery	4,100
Glass	1,058
Blacksmith's Work, viz. Nail makers, farriers and horse-shoers, chain and spade makers, &c.	4,520
Furniture and Woodwork	6,824
Chemicals	4,000
Pottery	1,684
Shipping, viz. Shipwrights, seamen, ship-joiners, pilots, watermen, &c.	3,798
Leather, viz. Saddlers, leather case makers, &c.	530
Music, viz. Piano and organ makers, artists	900
Watchmaking and Goldsmiths' work	316
Ropes and Sails	1,900
Labourers	1,200
Stone Work, viz. Paviors, carvers, &c.	487
Women, viz. Upholstresses, bookbinders, collar makers, machinists, &c.	525

Of this number, 566,985 were represented by their various delegates at the last annual Labour Parliament or Trades Congress, held at Newcastle, in September 1876. Although this is not a very large proportion out of the enormous mass of the industrial population of Great Britain, it is a rapidly growing one, and quite influential and important enough to make those who are interested in the prosperity of the

kingdom, very anxious that the leaders of the movement should be moderate in their demands for changes, and capable of remembering, that the trade and industries of even a great country like ours are easily frightened away by injudicious and ill-advised agitation. If the working classes of England would compare their own condition with those of other countries, the great bulk of them would be somewhat astonished to find what superior advantages they enjoyed in almost every way, and that it rested very much with themselves to improve these advantages.

It is with feelings of greater satisfaction that we turn to the second confederation of working classes, viz. Friendly Societies, which are very numerous and increasing rapidly. In the Report of the Registrar for 1874 it is mentioned "that there are in England and Wales above 32,000 Friendly Societies, with 4,000,000 of members, and at least as many persons who are dependent on the members insured, making, on the whole, about 8,000,000 of persons insured in these mutual voluntary relief funds out of 23½ millions of inhabitants, or about one insured member out of every six persons, of whom the greater number belong to the working classes."

The total returns for 1874 were:

	Amount of Funds.	No. of Members.
	£	
England	8,716,420	2,003,483
Wales	321,870	72,410
Total	9,038,290	2,075,893

The legislation under which this class of benefit societies have been placed are, the Friendly Societies Act of 1855 (18 & 19 Vic. c. 63); the Friendly Societies Amendment Act of 1867 (30 & 31 Vic. c. 117); the Friendly Societies Act of 1875 (38 & 39 Vic. c. 60); and the Friendly Societies Amendment Act of 1876 (39 & 40 Vic. c. 32).

Provident or co-operative societies have very largely increased within the last few years, not only amongst the working classes, but also in the richer sections of society, and this increase cannot but be a subject of congratulation, if only on the score of obligation to make ready-money payments, and thus avoid debt.

The following is the statement of societies in Great Britain, according to the returns of 1874:

	No. of Societies.	No. of Members.	Amount of Share Capital.	Cash paid. Goods.	Net Profit.	Dividend to Members.
			£	£	£	£
England .. Wales ..	810	357,821	3,653,582	12,843,149	1,070,923	967,482
Scotland ..	216	54,431	250,026	..	155,087	135,757

Provision, grocery, and drapery stores are the chief outlets for co-operative enterprise; but it sometimes takes a higher range, such as are to be found in the Huddersfield Co-operative Iron Works, the Sheffield Engineering Company in Yorkshire, the Rochdale Manufacturing Company, the North of England Co-operative Printing Company in Manchester, &c.

The number of Loan Societies is rather large, especially in proportion to the number of members in each. The statistics of 1875, for England and Wales,

were: number of societies, 291; number of members, 22,776; amount paid by depositors or shareholders, 128,512*l.*; number of applications for loans, 90,388; number of borrowers to whom loans were granted, 83,768; amount paid for interest, 23,228*l.*; net profits, after paying expenses of management, 13,523*l.*

CHAPTER XIII.

WORKING-CLASS LEGISLATION.

ALTHOUGH Acts of Parliament are not in themselves very interesting in their recital, it would be impossible to omit this branch of the subject in any work dealing with the artisan and labourer. Legislation for this section of the British population has been very abundant of late years; and a knowledge of this fact ought effectually to dispose of the silly cry, that the various governments have overlooked the interests of the working classes. Indeed, I question whether many of my readers are aware of the number of Acts that have been passed under this head, as I have not been able hitherto to find a complete summary of them in any publication. I propose to touch very briefly upon the leading features of the principal Acts, so as to show how our factory legislation has grown up; and also to point the moral, that this branch of our laws has become very unwieldy and wants unification. That the necessity has been recognized, is evident from the exhaustive Report issued at the commencement of the year 1876 by the Factory Enquiry Commission; and it is to be hoped that many inconsistencies in the working of these Acts will ere long be done away with. I have occasionally referred to them more at

length, when treating of the respective trades to which they apply.

In the following list it must be remembered, that a large proportion does not come under the head of Factory Acts properly so called, but that *all* the legislation has been included, and tabulated according to date.

1562.—5 Elizabeth, c. 4.

An Act touching dyvers orders of artificers, labourers, servantes of husbandry, and apprentices.

1702.—1 Anne.

An Act for preventing the abuses and frauds of persons employed in the woollen, linen, fustian, cotton, and iron manufactures.

1721.—7 Geo. I. c. 13.

An Act for regulating the journeymen tailors.

1723.—9 Geo. I. c. 27.

An Act for the regulation of journeymen shoemakers.

1726.—12 Geo. I. c. 34.

An Act to prevent unlawful combination of workmen in the woollen manufactures.

1747.—20 Geo. II. c. 19.

An Act for the adjusting of wages of certain servants.

1754.—27 Geo. II. c. 6.

Regulation of Wages Amendment Act.

1758.—31 Geo. II. c. 11.

An Act to determine differences between masters and servants in husbandry.

1765.—5 Geo. III. c. 51.

An Act for repealing laws on woollen manufactures.

1766.—6 Geo. III. c. 25.

An Act for better regulating apprentices.

1777.—17 Geo. III. c. 56.

An Act for preventing abuses in the manufacture of hats, wool, linen, fustian, cotton, iron, leather, fur, hemp, flax, mohair, and silk; and to prevent fraud by journeymen dyers.

1779.—19 Geo. III. c. 49.

An Act to prevent abuses in payment of wages in the bone and thread lace manufactures.

1788.—28 Geo. III. c. 48.

An Act for the better regulation of chimney sweeps.

1793.—33 Geo. III. c. 55.

An Act to fine masters for ill-usage of apprentices.

1799.—39, 40 Geo. III. c. 77.

An Act for the security of colliers and miners.

1802.—42 Geo. III. c. 73.

Factory Health and Morals Act.

1819.—59 Geo. III. c. 66.

Factory Act.

1820.—60 Geo. III. c. 5.

Factory Act (Preservation of Health).

1823.—4 Geo. IV. c. 29.

Powers of Magistrates in Apprenticeships Act.

1823.—4 Geo. IV. c. 34.

An Act enlarging the same.

1824.—5 Geo. IV. c. 96.

Arbitration Amendment Act.

1825.—6 Geo. IV. c. 63.

Factory Act.

1825.—6 Geo. IV. c. 129.
Combination of Workmen Amendment Act.

1829.—10 Geo. IV. c. 51.
Factory Amendment Act.

1829.—10 Geo. IV. c. 63.
Factory Amendment Act.

1829.—10 Geo. IV. c. 52.
An Act to determine disputes in silk trade.

1831.—1, 2 Wm. IV. c. 39.
Factory Act.

1831.—1, 2 Wm. IV. c. 3.
An Act to prohibit the payment of wages in goods or otherwise than in current coin of the realm (Truck Act).

1833.—3, 4 Wm. IV. c. 103.
Factory Act (Lord Ashley's Act).

1834.—4, 5 Wm. IV. c. 1.
Factory Amendment Act.

1834.—4, 5 Wm. IV. c. 35.
Chimney Sweepers Regulation Act.

1840.—3, 4 Vic. c. 85.
Chimney Sweepers Regulation Act.

1842.—5, 6 Vic. c. 7.
Regulation of Apprentices Amendment Act.

1842.—5, 6 Vic. c. 99.
Mines and Collieries Regulation Act.

1843.—6, 7 Vic. c. 40.
Prevention of Fraud Act in Woollen Manufactures.

1844.—7, 8 Vic. c. 15.
Factories Regulation Act.

1845.—8, 9 Vic. c. 29.
Print Works Regulation Act.

1845.—8, 9 Vic. c. 128.
Regulation of Tickets Act in silk trade.

1846.—9, 10 Vic. c. 40.
Rope Walks Exemption Act.

1847.—10, 11 Vic. c. 29.
Factory Act.

1850.—13, 14 Vic. c. 54.
Factory Act.

1850.—13, 14 Vic. c. 100.
Inspection of Coal Mines Act.

1853.—16, 17 Vic. c. 104.
Factory Act.

1855.—18, 19 Vic. c. 108.
Inspection of Coal Mines Amendment Act.

1855.—18, 19 Vic. c. 132.
Labourers' Dwellings Act.

1855.—18, 19 Vic. c. 63.
Friendly Societies Act.

1856.—19, 20 Vic. c. 38.
Factory Act.

1859.—22, 23 Vic. c. 34.
Combination of Workmen Amendment Act.

1860.—23, 24 Vic. c. 78.
Bleaching and Dyeing Act.

1860.—23, 24 Vic. c. 151.
Regulation and Inspection of Coal Mines Act.

1861.—24, 25 Vic. c. 117.
Lace Factories Act.

1862.—25, 26 Vic. c. 79.
Coal Mines Amendment Act.

1862.—25, 26 Vic. c. 89.
Industrial and Provident Societies Act.

1862.—25, 26 Vic. c. 8.
Employment of Women and Children in Open-air Bleaching Act.

1863.—26, 27 Vic. c. 38.
Factories Amendment Act (Bleaching and Dyeing).

1863.—26, 27 Vic. c. 40.
Bakehouses Regulation Act.

1864.—27, 28 Vic. c. 37.
Chimney Sweepers Regulation Act.

1864.—27, 28 Vic. c. 98.
Bleaching and Dyeworks Extension Act.

1864.—27, 28 Vic. c. 48.
Factories Extension Act.

1867.—30, 31 Vic. c. 103.
Factories Extension Act.

1867.—30, 31 Vic. c. 117.
Friendly Societies Amendment Act.

1867.—30, 31 Vic. c. 141.
Master and Servant Act.

1867.—30, 31 Vic. c. 146.
Workshop Regulation Act.

1867.—30, 31 Vic.
Arbitration Act.

1867.—30, 31 Vic. c. 117.
Industrial and Provident Societies Amendment Act.

1867.—30, 31 Vic. c. 130.
Agricultural Gangs Act.

1868.—31, 32 Vic. c. 130.
Artisans' and Labourers' Dwellings Act.

1869.—32, 33 Vic.
Trades Unions Funds Protection Act.

1870.—33, 34 Vic. c. 62.
Factory and Workshop Act.

1870.—33, 34 Vic. c. 30.
Wages Attachment Abolition Act.

1870.—33, 34 Vic.
Wages Arrestment Act (Scotland).

1870.—33, 34 Vic. c. 105.
Truck Commission Act.

1871.—34, 35 Vic. c. 104.
Factory and Workshops Amendment Act.

1871.—34, 35 Vic. c. 19.
Factory and Workshops Act (exemption of Jews).

1871.—34, 35 Vic. c. 31.
Trades Unions Amendment Act.

1871.—34, 35 Vic. c. 32.
Criminal Law Amendment Act.

1871.—34, 35 Vic. c. 80.
Industrial and Provident Societies Amendment Act.

1872.—35, 36 Vic. c. 76.
Coal Mines Regulation Act.

1872.—35, 36 Vic. c. 77.
Metalliferous Mines Regulation Act.

1872.—35, 36 Vic. c. 46.
Arbitration between Masters and Workmen Act.

1873.—36, 37 Vic. c. 67.
Employment of Agricultural Children Act.

1874.—37, 38 Vic. c. 44.
Factory Act (health of young persons, women, and children).

1874.—37, 38 Vic. c. 48.
Hosiery Manufacture and Wages Act.

1874.—37, 38 Vic. c. 59.
Working Men's Dwelling Act.

1875.—38, 39 Vic. c. 70.
Chimney Sweepers Amendment Act.

1875.—38, 39 Vic. c. 90.
Employers and Workmen Act.

1875.—38, 39 Vic. c. 86.
Conspiracy and Protection of Property Act.

1875.—38, 39 Vic. c. 36.
Artisans' Dwellings Act.

1875.—38, 39 Vic. c. 60.
Friendly Societies Act.

1876.—39, 40 Vic. c. 22.
Trade Union Amendment Act.

1876.—39, 40 Vic. c. 32.
Friendly Societies Amendment Act.

Without touching upon any of the earlier Acts, I
1802. will pass on at once to that of 1802 (42 Geo. III. c. 73), which was memorable in the history of our

social legislation as being the first to recognize the terrible evils of the factory system, although this was only then in its infancy. I have referred, under the head of the textile operative, to the miseries endured by the apprentices of those days, and therefore need not recur to them here, but will merely mention that to the first Sir Robert Peel was due the honour and credit of passing this Act, which was the thin end of the wedge for all successive laws. Its main provisions included those mills and factories where three or more *apprentices*, and twenty or more persons were employed; and directed that the rooms should be washed well with lime and water twice a year; that the apprentices should be clothed with two suits yearly, and should be instructed in reading, writing, and arithmetic during the first four years; that the hours of work should not be more than twelve per day, exclusive of meals; that work might be carried on by night during certain periods in mills with fifteen hundred spindles. Visitors were also appointed, penalties fixed, &c. This was an excellent commencement; but, the increased development of the steam engine so rapidly caused a corresponding development of machinery, and so great an increase in the number of mills, that the circumstances under which the Act was framed were changed, so as to make it practically useless. The apprentice system indeed was given up and free labour substituted, though the abuses that formerly attended the apprentices were repeated as badly as ever in the case of the juvenile operatives, while the duration of labour was fourteen, fifteen, or even sixteen

hours per day for a single set of hands. Again were Sir R. Peel and his son to the fore, impressing these facts upon the country, and with such good result that
1819. the Act of 1819 (59 Geo. III. c. 66) was passed, which led to the restriction of labour for unapprenticed children. By this law *no child* was to be employed till nine years of age, while *no person* under sixteen was to work more than twelve hours per day; lost time to be made up only at the rate of an additional daily hour.
1825. A succeeding Act, in 1825 (6 Geo. IV. c. 63), improved upon this by limiting the Saturday work to nine hours, and directed that a register should be kept in every mill for entering each child, such book to be a voucher of the age.
1831. By the Act of 1831 (1 & 2 Wm. IV. c. 39) it was provided that no person under the age of twenty-one should be allowed to work at night. The hours of labour were fixed at sixty-nine per week, which might be extended three hours per week to make up for lost time. All these Acts, however, were rendered practically inoperative from their possessing no adequate compulsory clauses, a failing which was not remedied
1833. till 1833, when Lord Ashley (now Earl of Shaftesbury) introduced a Bill (3 & 4 Wm. IV. c. 103), of which the salient points were as follows: Persons under eighteen were not allowed to work at night in factories, or for more than twelve hours per day, except for lost time, at the rate of three hours per week; the employment of children under nine was prohibited, and also of children of eleven, twelve, and thirteen for more than eight hours per day. Certificates of age and appearance were

required in the case of children, and no child between thirteen and eighteen could be employed more than nine hours a day, or at night, without a certificate of age. The great feature of this Act, however, was the establishment of a system of inspection; four inspectors were first of all appointed, and this may be said to be the real foundation of the present factory system.

The year 1834 witnessed the extension of legislative protection to other classes of operatives, besides those who are properly spoken of as factory hands, and which term by common consent has been limited to those employed in textile mills. Chimney-sweepers were the first to feel the beneficent changes (though they had previously been the subject of an old Act in 1788); and certainly the accounts of the brutalities practised on the wretched little victims showed how greatly legislation was needed. The Act of 4 & 5 Wm. IV. c. 35, provided for the better regulation of chimney sweepers and their apprentices, and directed attention to the safer construction of flues. No child under ten was to be apprenticed, and all such were to be designated by a brass plate on the cap. Boys were not to be let out for hire, nor were they allowed to ascend a flue. Provision was also made that no unwilling lads should be bound to the trade, and stringent regulations were laid down against ill-treatment. 1834.

This was followed up six years later by the Act of 1840 (3 & 4 Vic. c. 85), which enacted a penalty for any person under twenty-one ascending a chimney or flue, while the age of apprenticeship was increased to 1840.

sixteen. There was also a well-intentioned effort to improve the construction of chimneys, by ordering that none should be built save of a certain size and angle.

1842. In 1842 a far more (numerically) important section of the population received attention, viz. the young people employed in collieries, many of whom (and especially the females) were degraded to almost the condition of beasts of burden. The commencement of the elaborate system of coal-mine inspection dates from this year, when an Act was passed (5 & 6 Vic. c. 99) prohibiting the employment of females, as also boys under ten, underground in mines and collieries. At this date inspectors were first appointed; and the increased safety of the workpeople provided for, by allowing no one under fifteen to be in charge of a winding-engine, where steam was used; and of their morals, by the prohibition of the payment of wages at a publichouse.

1844. By the Act of 1844 (7 & 8 Vic. c. 15) the factory inspection system was brought into a more compact and official form, what might and what might not be done being better defined, as well as protection given to the inspectors in the execution of their duty. Sub-inspectors were appointed, and a head office established in London. In fact the system became, for the first time, a recognized department of State routine. The appointment of certifying surgeons also dates from this, while an important clause provided for the greater protection of the "hands" by the compulsory guarding of machinery and the forbidding mill gear to be cleaned while in motion; as also for the more efficient sanitary supervision of children in wet-spinning flax

mills. Notice of accident was required to be given, and damages allowed as compensation in the case of preventible bodily injury. There was also a further limitation of the labour of children, who could only be employed for seven hours per day, though they might work for ten hours on three days of the week, provided that they attended school on the alternate days. The hours were reckoned from the time when they began in the morning. Women could only be employed under the same regulations as young persons, viz. under the age of eighteen, while the Saturday half holiday (from 4.30 P.M.) was recognized. The length and minutiæ of the Act proved that the Government was thoroughly aroused to the necessity of a good factory supervision.

In the next year (8 & 9 Vic. c. 29) the Print Works Regulation Act was passed, by which that large section of textile operatives, which had not been previously included under the Factory Acts, was now legislated for, by being placed under the same system of inspection as that of the spinning and weaving mills. 1845.

In 1846 the Rope Walks Exemption Act (9 & 10 Vic. c. 40) was passed, though of a very negative character, simply declaring that hand rope-makers did not come under the Factory Acts. This, as we shall presently see, is one of those anomalies which should be done away with. 1846.

In 1847 (10 & 11 Vic. c. 29) a further restriction was placed on the hours of labour of young persons and females, viz. to eleven hours per day or sixty-three hours per week. A lull then took place in working-class legislation; and it was not until 1850 (13 & 14 1847. 1850.

Vic. c. 54) that the next Factory Act was passed, in which it was provided that no young person or female should be employed before 6 A.M. or after 6 P.M., and on Saturdays after 2 P.M.; meals to be taken between 7.30 A.M. and 6 P.M., instead of between 7.30 A.M. and 7.30 P.M. as before; while young persons and females were not allowed to be employed for lost time after 7 P.M. This Act, however, only referring to young
1853. persons and women, it was found necessary in 1853 (16 & 17 Vic. c. 104) to supplement it with a similar Act for children.

1855. In 1855 coal mines were again legislated for (18 & 19 Vic. c. 108) the duties of the inspectors being more accurately defined, and further details for protection of life being laid down, such as more adequate ventilation, fencing of shafts, proper signalling, &c., while immediate notice had to be given of every accident.

Hitherto the legislation had been of a specific character, devoted to certain trades; but in this year, the labouring classes in the aggregate received an instalment, in the shape of an Act (18 & 19 Vic. c. 132) for facilitating the erection of dwelling houses by means of companies with certain permissive rights, subject to regulations as to drainage, ventilation, and inspection by boards of health.

Certain doubts having risen as to the sufficiency of protection of workpeople from machinery in factories,
1856. an Act was passed in 1856 (19 & 20 Vic. c. 38) more
1860. strictly defining mill gear and machinery; and in 1860 (23 & 24 Vic. c. 78) another section of factory operatives was included under factory legislation, viz. those

employed in bleach and dye works. All the former Acts were henceforth to apply to this division of labour, except in the case of bleaching in the open air. Females and young persons might be employed till 4.30 P.M. on Saturdays and 8 P.M. on other days. The clause as to the meal-times, however, did not extend to this Bleach and Dye Act.

In the same year the area of operations of coal-mine inspection was extended (23 & 24 Vic. c. 151), so as to include all iron mines under the same supervision, while many additional improvements were introduced for the safety of underground workmen, such as still more ventilation, fencing off of dangerous places, the use of safety lamps, proper chains and other lowering apparatus. The interests of the colliers were also looked after, by permissive rules for weighing coal and ironstone at the pit's bank.

The year 1861 was marked by an Act (24 & 25 Vic. 1861. c. 117) to place the operatives in the lace establishments under the factory system, they having been, up to this year, entirely without supervision. The only addition worth notice was, that the Act included youths between sixteen and eighteen, whom it allowed to work between 4 A.M and 10 P.M., though for not more than nine hours between those times.

In 1862 a fresh Coal Mine Regulation Act (25 & 26 1862. Vic. c. 79) was passed. Some terrible accidents having happened, in consequence of the workmen not being able to leave the colliery in time, it was enacted that every owner should in future provide two distinct means of egress from his coal seams, such outlets to be

separated by at least 10 feet of strata. But in cases where unusual difficulties existed, the Act allowed of arbitration, as also extension of time.

1863. In 1863 another section of the operative class was brought under the factory system, viz. those who are employed in "calendering" or "finishing" yarn and cloth, and who were by this Act (26 & 27 Vic. c. 38) considerably bettered in the conditions of labour.

The bakers also, whose hours of work and general sanitary arrangements had been the subject of a searching inquiry, were in this year legislated for; the Bakehouses Regulation Act (26 & 27 Vic. c. 40) prohibiting the employment of any person under eighteen in a bakehouse between 9 P.M. and 5. A.M.; and also the use, as a sleeping place, of any room on the same level with the bakehouse, except under certain provisions of ventilation.

1864. The year 1864 was a busy one in working-class legislation, no fewer than three Acts having been passed. (*a*) The chimney sweepers were the subject of one (27 & 28 Vic. c. 37), the protection of the young children being still further carried out. No child under ten was to be employed in the trade, nor could a master sweep bring with him any person under the age of sixteen to the house where the chimney was being swept. (*b*) The Factory Acts were partially extended to the lucifer-match and earthenware trades, so far as applied to the children, young persons, and women taking their meals in any part of the house; and to fustian cutting, as to the age of the children employed (eleven years); while (*c*) a still further sec-

tion of operatives were brought under the Acts, viz. those engaged in "hooking," "lapping," making up and packing yarns and cloth.

The year 1867 was signalized both by the number and importance of its Acts. (*a*) The Factory Acts were extended (30 & 31 Vic. c. 103) so as to embrace blast furnaces, copper mills, iron forges and foundries, brass foundries, machine making, india-rubber and gutta-percha, paper, glass, and tobacco manufactories, letter-press printing, book-binding, or any trade indeed in which fifty or more persons were employed on the premises. The principal points of this Extension Act were, that no child, young person, or woman should be employed in these trades on a Sunday; no boy under twelve and no female, in that part of a glass-house where melting and annealing were carried on; and no child under eleven in grinding in the metal trade; while there were provisions as to taking meals in glass houses, ventilation, and greater care in the fixing of grindstones. Owing to the exigencies and customs of some of these trades, however, there were several modifications, as to youths of sixteen years of age being employed for fifteen hours a day under certain conditions; and the employment of children, young persons, and women for different periods of time, as long as the legal hours of work were not increased. Letter-press printing, paper making, book-binding, blast furnaces, and iron mills were the principal trades to which these modifications applied, as also the manufacture of preserves from fruit. 1867.

(*b*) The Master and Servant Act (30 & 31 Vic.

c. 141) was framed in order to provide a remedy in the case of non-fulfilment of service or contract on the part of the employer or employed, by complaint before a justice, who might order compensation to the aggrieved party, with powers to insist upon the fulfilment of, or to annul, the contract. In case of aggravated conduct the offender might be imprisoned.

(*c*) The Agricultural Gangs Act (30 & 31 Vic. c. 130) was brought forward to do away with the evils of working children and women in "gangs," driven by a gang-master, a system (most common in the Eastern counties) pregnant with mischief, and a source of great misery throughout the district where it was carried on. By this Act, children under eight were altogether forbidden to be employed, as also women in gangs in which men were working, or which was commanded by a gang-master. Leaders of gangs were also compelled to have a license, granted to them by the justices.

(*d*) The Workshop Regulation Act (30 & 31 Vic. c. 146) marked another great era in this class of legislation. The Factory Acts applying only to establishments where fifty or more were employed, it was thought advisable that small places should be also brought under the supervision of the law. This Act, therefore, prohibited the employment of children under eight in any handicraft, whether for gain or otherwise. No child (i.e. under thirteen) could be employed for more than six and a half hours per day, between 6 A.M. and 8 P.M. No young person (i.e. between thirteen and eighteen) or woman could be employed more than twelve hours between 5 A.M. and 9 P.M., of which time

one and a half hour was to be devoted to meals. The cessation of work on Sunday, and on Saturday after 2 P.M. was also enforced, except, as regarded the latter day, in places where not more than five persons were employed in making or repairing articles for sale. Better ventilation was insisted upon in all shops where grinding, glazing, or wheel polishing was carried on, so that the dust could be removed by fans or otherwise. Inspection was provided by the local authorities, though the factory inspectors were empowered to visit the workshops if required. Education was looked after by a clause, compelling every child employed in a workshop to attend school for ten hours each week, the employer being empowered, on the application of the teacher, to pay for the schooling, and deduct the sum from the child's wages.

(*e*) The Arbitration Act (30 & 31 Vic.) was passed to permit the granting of licenses for courts of arbitration or conciliation for the settlement of disputes, such courts to consist of a chairman and not less than two, or more than ten, masters and workmen, to be elected by that trade in which the dispute was being carried on. Rates of wages and hours of labour, however, could not be dealt with by these courts.

The year 1868 was signalized by an Act (31 & 32 Vic. c. 130) to provide better dwellings for artisans and labourers. Not only were houses and premises, found by the officer of health unfit for human habitation, to be remedied by the owner and substituted by better ones, but any four or more householders were empowered to report where disease existed in any street, 1868.

and request the local authorities to take action. The owner was thereupon obliged to make the necessary alterations, or, in case of neglect, the local authority did it for him, charging him with the cost.

1870. By the Factory and Workshops Act of 1870, (33 & 34 Vic. c. 62) the Factory Extension Act of 1867 was made to apply to print, dye, and bleach-works, including the open-air bleaching process. In the table of permanent modifications, it was enacted, that women employed in the trades of fruit preserving and fish curing might work between June 1st and December 24th for fourteen hours, provided that this did not occur for more than five consecutive days per week.

(*b*) The Wages Attachment Abolition Act (33 & 34 Vic. c. 30) provided that no order for the attachment of wages of servant, workman, or labourer should henceforth be made in the county court.

(*c*) The Wages Arrestment Limitation Act (Scotland), was very similar in its design, with the exception that it named 20*s.* per week as the limit of wages, within which no arrestment could be made, although it would apply to anything over that amount.

(*d*) The Truck Commission Act (33 & 34 Vic. c. 105) was passed to inquire into the prevalence of the truck system (one of the very worst evils that ever infested the life of the working man), and the disregard of previous legislation on this head, viz. the Act of Wm. IV., which had become completely inoperative.

1871. In 1871 no less than five new Acts were framed.

(*a*) By the Factory and Workshop Amendment Act

(34 & 35 Vic. c. 104) the supervision of workshops was taken away from the local authorities and was placed under the factory inspectors. Those who were employed in the immediate curing of fish on the arrival of the boats, were exempted from the Acts; while females under sixteen and children under ten were prohibited from making bricks and tiles, not being ornamental tiles. Certain exceptions were authorized to be made, in cases where the business depended upon the weather or the seasons of the year, so that young persons of fourteen and women might be employed for a period not exceeding fourteen hours per day. In brickyards, males of sixteen and women might work for the same period, provided that it was not for more than three days in any one week.

(*b*) By the Jews Exemption Act (34 & 35 Vic. c. 19) young persons and females of the Jewish persuasion were allowed to work on Sundays, without fear of penalty, provided that the workshop was closed on Saturday till sunset and not open for traffic on Sunday; and also that the inspectors were allowed free admission on the latter day.

(*c*) The Trades Union Amendment Act (34 & 35 Vic. c. 31) made union legal, by declaring that members would not render themselves liable to criminal prosecution for conspiracy by combining together. Trade union contracts, however, as a rule, were not enforceable by any court, nor did the Friendly Societies, the Industrial and Provident Societies, or the Companies Acts apply to trade unions. They were obliged to be registered, and were permitted to purchase or lease land (not

more than one acre) and buildings for the purposes of the union. The term "trades union" was defined by the Act, as meaning a combination, whether temporary or permanent, for regulating the relations between workmen and masters, or between workmen and workmen, or between masters and masters, or for imposing restrictive conditions for the conduct of any trade or business, as would, if this Act had not been framed, have been deemed an unlawful combination, by reason of some one or more of its purposes being in restraint of trade.

(*d*) The Criminal Law Amendment Act (34 & 35 Vic. c. 32) dealt with all cases of violence, threats, and molestation of master or workman, the punishment of such offences being (not exceeding) three months imprisonment, with or without hard labour. Molestation was defined as, following another person persistently about from place to place, hiding his tools, clothes, or any other property, so as to prevent his making use of them; watching or besetting his house or place of business, &c. Both this and the Master and Servant Act of 1867 were most unpopular with the working classes, who felt them, and particularly the former, as especially directed against unions of working men.

(*e*) The Industrial and Provident Societies Amendment Act (34 & 35 Vic. c. 80) gave increased powers to societies of this class to build, sell, lease, or mortgage houses, cottages, or other buildings; and also gave facilities as to copyhold.

1872. In the following year a new Arbitration Act was passed (35 & 36 Vic. c. 46), so as to enable masters and

workmen to settle their disputes by the appointment of one or more arbitrators, or an umpire, in case the latter disagreed. Any agreement entered into under this Act was binding upon both parties, provided that a workman gave notice within forty-eight hours, that he declined to be bound by it. A certain number of days' notice (not exceeding six) had to be given by employer or employed, in case of an intention to cease employing or serving, where such notice was made part of the agreement.

(*b*) The Coal Mines Regulation Act of this year (35 & 36 Vic. c. 76) considerably extended the supervision over this class of operatives. Managers of collieries were required to be certificated after examination for competency by a district board, although a certificate of service could be given to those managers who had served up to a certain date before the Act, while some additional rules were laid down as to the qualifications and duties of the inspectors. The following restrictions were made as to employment underground, viz. women and girls, not at all; boys under twelve, not at all, except in cases of very thin seams; boys under thirteen and young persons under sixteen, not more than ten hours per day or fifty-four hours per week, with an interval of twelve hours for rest between each two consecutive periods of employment; none of these boys to go under-ground without being reported to the manager. Above-ground, children under ten not to be employed at all; under thirteen, for not more than six days per week or more than six hours per day, if the employment extended to more than three days

per week. Every boy between ten and twelve was required to attend school for at least twenty hours in every two weeks; and stringent rules were laid down with reference to this part of the Act. An elaborate system of directions was also provided for the safety of the workpeople, embracing the inspection of gaseous and non-gaseous mines, withdrawal of workmen in case of danger, safety lamps, gunpowder and blasting, fencing of shafts, manholes and places of refuge, signalling, raising, &c.; while facilities were provided for inspection of the mine on behalf of the workmen as well as of the owners. The Act also provided for arbitration in cases where the owner was unwilling to comply with the demands of the inspector.

(*c*) The Metalliferous Mines Regulation Act (35 & 36 Vic. c. 77) included all mines except those of coal and ironstone, which were under the preceding Act. Hitherto the metalliferous mines had been overlooked, but they were now placed under as strict supervision as those of coal, and the provisions of the two Acts were, in the main, identical.

1873. In this year a new Agricultural Act was passed (36 & 37 Vic. c. 67), which came into force in 1875. It prohibited the employment of any child under eight in agricultural work, except by the parent of the child, who worked land in his own occupation; and it also restricted the employment of any child above eight without a certificate of age and of the completion of two hundred and fifty school attendances, if under ten years of age, and one hundred and fifty attendances, if

ten or upwards. There were, however, exemptions in the case of children employed in harvest or hopping, or who were unable to attend school. The age of eight, the lowest allowable for employment in agricultural gangs, was also extended to ten.

In 1874 a very important Act was brought forward, 1874.
viz. the Factory Act—health of women, young persons, and children (37 & 38 Vic. c. 44). It dealt principally with the hours of labour and times of meals, and provided that the period of work should be between 6 A.M. and 6 P.M., or 7 A.M. and 7 P.M.; that no one should be employed continuously for more than four and a half hours without an interval of half an hour for a meal, and that two hours should be allowed for meals each day, except Saturday. Children might be employed in morning or afternoon sets, or on alternate days for the whole day. The Act also enacted that after January 1, 1876, the age of a "child" should be extended to fourteen, unless a certain standard of educational proficiency was attained. During 1875 a child could not be employed in a factory if under nine, nor at the end of that year under ten. The Factory Act of 1850, which permitted longer hours for children in lace establishments, was repealed.

(*b*) The Workmen's Dwellings Act (37 & 38 Vic. c. 59) allowed municipal corporations to grant or lease their land to anyone who bound themselves to erect working-class dwellings upon it.

(*c*) The Hosiery Manufacture and Wages Act (37 & 38 Vic. c. 48) forbid employers in that trade to let out knitting frames and machinery to their work-

people, deducting the rent from the price of the work. This Act struck at the root of one of the greatest evils in the Midland districts. All work from henceforth was to be paid for *net* without any deductions, except for bad workmanship.

1875. The year 1875 was somewhat prolific in working-class legislation. (*a*) More stringent regulations were laid down about chimney sweepers (38 & 39 Vic. c. 70), who were required to be registered and obtain a certificate before they could practise their trade. There is no doubt but that this Act will tend to make the craft more respectable.

(*b*) The Employers and Workmen's Act (38 & 39 Vic. c. 90) gave powers to the County Court as to ordering of payments, adjusting or setting off one against the other, recision of contract, and taking of security. A dispute might also be heard before justices, and payment ordered, when the amount did not exceed 10*l.* Justices were given jurisdiction in disputes between masters and apprentices. In the case of factory children, young persons, and women, forfeiture for absence or leaving work might not be deducted as a set-off against a wages claim, further than the amount of damage sustained by the employer in consequence of the absence.

(*c*) By the Conspiracy and Protection of Property Act (38 & 39 Vic. c. 86) it was ordered, that an agreement or combination by two or more persons to do any act in furtherance of a trade dispute should not be indictable as a conspiracy, as long as that act was not one which was punishable as a crime. Punishment

was provided in cases of breach of contract by persons employed in the supplying of gas and water; and also when such breach of contract involved injury to persons or property. There were also penalties for neglect by masters to provide the proper necessaries for apprentices, as well as penalties for intimidation or annoyance.

(*d*) The Artisans' Dwellings Act (38 & 39 Vic. c. 36) was the most comprehensive effort that has been yet made to grapple with the growing evil of close and unhealthy dwellings for the working classes in our large cities and towns—"unfit for human habitation, causing death and loss of health, not only in the courts and alleys, but also in other parts of such cities and boroughs." The difficulty lay in the fact, that the streets in question belonged to so many owners, that it was not in the power of any one owner to make the needful alterations. The Act applied to London, and to urban sanitary districts containing a population of twenty-five thousand and upwards; and it empowered the local authority, on being satisfied by official representation of the unhealthiness of any district, to make and carry out a scheme for its improvement. The machinery for this official representation and for the subsequent improvement schemes was made as simple as possible; and ample powers were given to any local authority to borrow money for these purposes. The speedy action that was taken in some of the worst districts, both in London, Birmingham, and other towns, while the Act was yet in its infancy, proved how greatly a reform was needed in this matter.

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